

# COMBINED CATALOG


## Volume One

College Park  
University of Maryland

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1964-1966



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# COMBINED CATALOG

SERIES 1964-1966

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Volume One

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COLLEGE PARK  
UNIVERSITY OF MARYLAND

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*The 1964-1966 Series of University of Maryland Catalogs is published in a two-volume set of combined catalogs. Volume One contains catalogs pertaining to academic units located on the College Park Campus. Volume Two contains catalogs pertaining to academic units located on the Baltimore Campus. This is Volume One.*

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Catalogs in this volume are located  
in this order:

*Adventure in Learning*  
*(General Information)*

*College of Agriculture*

*College of Arts and Sciences*

*College of Business*  
*and Public Administration*

*College of Education*

*College of Engineering*

*College of Home Economics*

*College of Physical Education,*  
*Recreation and Health*

*Graduate School Announcements*

*Summer School*

*University College*

# *An Adventure in Learning*

*A GUIDE TO THE UNDERGRADUATE PROGRAMS*

The University of Maryland

UNIVERSITY OF MARYLAND BULLETIN is published three times in January, February, June, July and August; two times in November, December, March and April; and once in May and October. Re-entered at the Post Office in College Park, Maryland, as second class mail matter under the Act of Congress on August 24, 1912. Published twenty-five times.

VOLUME 20

NUMBER 1

SEPTEMBER 10, 1964





THIS PUBLICATION EXPLAINS HOW YOU MAY TAKE ADVANTAGE OF the opportunity for a quality education at moderate cost through the programs and facilities of your State University.

The key to your future lies in your own hands. The University of Maryland exists to help you to develop your particular talents and capabilities to the maximum degree.

At College Park and at Baltimore, the faculties and staff serve the citizens of the State through eight undergraduate colleges, a graduate school, and six professional schools.

We welcome your inspection of our program and urge you to visit the campus when you have an opportunity.

*Wilson H. Elkins*

DR. WILSON H. ELKINS  
*President of the University*

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# UNIVERSITY CALENDAR

CALENDAR, 1964-65

(Tentative)

## FALL SEMESTER, 1964

### SEPTEMBER

- 14-18 Monday to Friday—Fall Semester Registration
- 21 Monday—Instruction begins

### NOVEMBER

- 25 Wednesday, after last class—Thanksgiving recess begins
- 30 Monday, 8:00 A.M.—Thanksgiving recess ends

### DECEMBER

- 22 Tuesday, after last class—Christmas recess begins

1965

### JANUARY

- 4 Monday, 8:00 A.M.—Christmas recess ends
- 20 Wednesday—Pre-Exam Study Day
- 21-27 Thursday to Wednesday—Fall Semester Examinations

## SPRING SEMESTER, 1965

### FEBRUARY

- 2-5 Tuesday to Friday—Spring Semester Registration
- 8 Monday—Instruction begins
- 22 Monday—Washington's Birthday, Holiday

### MARCH

- 25 Thursday—Maryland Day, not a holiday

### APRIL

- 15 Thursday, after last class—Easter recess begins
- 20 Tuesday, 8:00 A.M.—Easter recess ends

### MAY

- 12 Wednesday—AFROTC Day
- 27 Thursday—Pre-Exam Study Day
- 28-June 4 Friday to Friday—Spring Semester Examinations
- 30 Sunday—Baccalaureate Exercises
- 31 Monday—Memorial Day, Holiday

### JUNE

- 5 Saturday—Commencement Exercises

## SUMMER SESSION, 1965

### JUNE

- 21-22 Monday to Tuesday—Registration, Summer Session
- 23 Wednesday—Instruction begins
- 26 Saturday—Classes (Monday Schedule)

### JULY

- 5 Monday—Independence Day, Holiday

### AUGUST

- 13 Friday—Summer Session Ends

## SHORT COURSES, 1965

### JUNE

- 14-18 Monday to Friday—Rural Women's Short Course

### AUGUST

- 2-6 Monday to Friday—4-H Club Week

### SEPTEMBER

- 7-10 Tuesday to Friday—Fireman's Short Course



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# To the Applicant for Admission

THIS BOOKLET IS THE ALL-PURPOSE, GENERAL INFORMATION BOOKLET OF THE University.

It contains the information you need

- ▶ to arrange your high school curriculum for acceptance by the various colleges of the University
- ▶ to select a course of study at the University
- ▶ to apply for admission
- ▶ to matriculate

*Adventure in Learning* also covers fees and expenses, housing, scholarships and loans.

The course catalog of the College of your choice will be made available to you after you enter the University.

OR

You may consult reference copies in your high school library, principal's office or office of the guidance counselor. Course catalogs usually require interpretation for new freshman students and should, therefore, be used in consultation with the high school guidance counselor or principal.

Professional school catalogs are available by writing to the office of the appropriate dean on the Baltimore campus.

Prospective part-time and evening adult education students may obtain the appropriate course catalog or brochure by writing to the Director, University College, University of Maryland at College Park.

Prospective graduate students may obtain the Graduate Catalog by writing directly to the Dean of the Graduate School, University of Maryland at College Park.

Prospective summer students may write to the Director of the Summer Session for copies of the Summer School Catalog—usually available after March 15.

## The University Heritage

FEW INSTITUTIONS OF HIGHER LEARNING IN THE UNITED STATES HAVE HAD as rich and proud a history as the University of Maryland. Students admitted will find the institution stressing programs of educational excellence, pursuing vital research, and rendering important services to the State.

Just 31 years after the signing of the Declaration of Independence, there was established in Baltimore a College of Medicine, the fifth such medical school in the United States. The College began with no visible assets save determination, enthusiasm and skill, and the first seven students enrolled received their lectures



in the homes of their professors. One member of the faculty, Dr. John Shaw, died as a result of exposure suffered while working winter nights in a dilapidated structure that was the college's home in 1808. The other two members of the faculty, Dr. John Beal Davidge and Dr. James Cocke, were extremely skillful researchers—professionally outstanding in that day and even more so from the perspective of today.

In 1812 the State Legislature authorized the College of Medicine to annex a Faculty of Divinity, a Faculty of Law, and a Faculty of Arts and Sciences. Together these four colleges became the University of Maryland. The college of Divinity and the undergraduate college of Arts and Sciences developed slowly, but highly successful departments of Dentistry and Pharmacy were added, along with a Training School for Nurses. The professional schools of Medicine, Law, Dentistry and Pharmacy were all among the half-dozen first of their kind to be established in America, and throughout most of the Nineteenth Century and into the Twentieth Century they were recognized among the foremost schools in each profession.

MEANWHILE, ON THE OLD ROSS BOROUGH ESTATE NEAR WASHINGTON, D. C., a group of wealthy planters were pioneering in an attempt to develop agriculture into a respectable academic discipline.

The Maryland Agricultural College, again one of the two or three first in the country, was established in 1856 on the Ross Borough Estate, just north of Washington. Because it was primarily a school for planters' sons, it suffered greatly during the Civil War, but in 1864 it became a land-grant institution and slowly emerged again, not only as the primary spokesman for the farming interests of the State but as an outstanding undergraduate college. In 1920 the College of Agriculture at College Park was consolidated with the University of Maryland in Baltimore. The merged institution continued under the name of the University of Maryland.

This, of course, forms only the briefest outline of the 157-year history of the University.

Although the University is a State institution quite large in physical plant, student enrollment, the number of courses and degrees offered, and services performed, its objectives remain constant and form a base for all educational activity. Simply stated they are: (1) to prepare students in the arts, the humanities, the pure and applied sciences, agriculture, business and public administration, home economics, industry, and for the professions; (2) to contribute to the civic, ethical, moral, cultural, spiritual, and general welfare; (3) to provide general education in its broadest sense, both formal and informal, for all students who enroll; (4) to develop those ideals and finer relationships among students which characterize cultured individuals; (5) to conduct systematic research and to promote creative scholarship; and (6) to offer special, continuation, and extension education in communities where it is feasible.

The government of the University is vested in a Board of Regents, each member of which is appointed by the Governor of the State to serve a term of seven years. The administration of the University is vested in the President. The following is a listing of the major administrative divisions on both campuses:

#### AT COLLEGE PARK

College of Agriculture  
College of Arts and Sciences  
College of Business and Public Administration  
College of Education  
College of Engineering, the Glenn L. Martin Institute of Technology  
Agricultural and Home Economics Extension Service  
  
Agricultural Services and Controls

College of Home Economics  
Department of Air Science  
College of Physical Education, Recreation and Health  
University College (formerly College of Special and Continuation Studies)  
Graduate School  
Summer School  
Agricultural Experiment Station  
Computer Science Center

#### AT BALTIMORE

School of Dentistry	School of Nursing	University Hospital
School of Law	School of Pharmacy	Psychiatric Institute
School of Medicine	School of Social Work	

A state-wide Natural Resources Institute is a part of the University of Maryland. Basic research facilities for the Institute are located at Solomons Island and at Crisfield.

THE UNIVERSITY'S EDUCATIONAL AND RESEARCH PROGRAMS ARE ENHANCED by its participation in the activities of the Southern Regional Education Board. The SREB is a public agency supported by the states of Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. Through the agency of the SREB, these states work together for higher education and to improve the economy of the region.

One program under the Southern Regional Education Board encourages arrangements between institutions whereby high cost educational programs are shared. For example, during the past 15 years Maryland residents have been provided veterinary medical training through a cooperative arrangement with the University of Georgia, and with the Tuskegee Institute. Medical and dental education arrangements have been effected with Meharry Medical College. The University's School of Dentistry, in a similar manner, provides for contract students from certain states where schools of dentistry have not been established. A cooperative program in Library Science exists with the University of North Carolina and a program in Forestry has been arranged with North Carolina State. The usual State participation involves paying the out-of-state fee.

## You are the Vital Factor

WHERE DO YOU FIT IN? YOU ARE THE BASIC, VITAL FACTOR IN THE UNIVERSITY'S educational program. It is with you in mind that the citizens of this State (your parents) contribute toward the establishment of a well-equipped University. Much has been done to provide the means for you to acquire an excellent education. You will have an opportunity to fulfill this obligation by diligent application in your studies.

If you are a high school student, or graduate, you are trying, certainly, to decide (1) whether or not to spend the next four years of your life at a college or university and (2) which institution and which course of study is the right one for you.

First you should know that the administration and faculty of the University of Maryland will make every attempt to help you find the answers to these questions. Through personal counseling, letters, and transmittal of information dealing with the academic program, the University attempts to present to the prospective student as complete a picture of its activities as possible. The University is willing to go all the way for you, both during your period of decision and (if accepted for admission) during your academic tenure. Now, here is what the University expects of you.

The University expects you to be a good student; it expects you to be a conscientious student. Even though the University is concerned with a large number of students, emphasis remains on the individual. An estimate of the value of the individual at the University was given by the President of the University, Dr. Wilson H. Elkins, in an address entitled "A Quantity of Quality."

*During the last few decades we have been witnessing a social revolution with the individual as the center, and it is extremely important that this revolution have a clear objective. Otherwise, it could very easily result in a widespread conviction that every one should share and share alike the benefits of a free society regardless of their capacity, effort, initiative, and ambition. Among other things this would lead to the weakening of higher education by the admission and retention of all comers to the campuses of the colleges and universities, and the reduction of our program to a low common denominator. This would be a disservice to society. We must therefore strive to direct the revolution toward the recognition of individual differences while assuring each individual of the opportunity to go as far along various courses as his talents and energies will permit.*

What President Elkins has said is that there are wide and impressively deep educational opportunities offered to each individual at the University of Maryland, but it is up to each individual to prove his own worth and to develop his talents according to his own special capabilities.

WHEN YOU VISIT THE CAMPUS OF THE UNIVERSITY OF MARYLAND AT EITHER College Park or Baltimore, you will recognize a number of major construction projects at various stages of completion. In anticipation of greatly increased enrollments, this condition is expected to continue for at least another decade.

The University possesses some 2,500 acres of land. The main campus at College Park encompasses about 300 acres with 800 additional acres adjacent to it available for agricultural research and teaching. At College Park the principal buildings are designed in a Georgian Colonial style. On the Baltimore campus, located in the vicinity of Lombard and Greene Streets, are situated seventeen major buildings including the original School of Medicine building constructed in 1812, the Out-Patient Department, the University Hospital, the Psychiatric Institute, the Frank C. Bressler Building, the Dental School Building, Pharmacy School and Nursing School Buildings, the School





of Law Building, the Gray Laboratory, the Baltimore Union, and the recently acquired Redwood Hall and Howard Hall. A new building for the School of Law is currently under construction.

In cooperation with the City of Baltimore and the Urban Redevelopment Program of the Federal government, the Baltimore campus is involved in a land clearing and development program.

## Admission to the University

NOW YOU WILL LIKELY ASK THIS QUESTION: WHO MAY BE ADMITTED TO the University?

The University says officially: "Admission from secondary school is based upon evidence indicating the applicant's probable success in the program of his choice."

By the word "evidence" the University means that:

- 1) you must be a graduate of an accredited secondary school;
- 2) your principal or headmaster should recommend you for entrance to the University, attesting to your character and ability;
- 3) you have completed the high school subjects required for the college and curriculum which you wish to enter;
- 4) you have completed the tests of the American College Testing Program\* and have had the results submitted to the Counseling Center of the University.
- 5) your scholastic average in major subjects in your last two years in high school has been satisfactory.

Actually, during your high school years, you have been preparing for the University. You should have maintained a good scholastic record and planned your curriculum so that you will have at graduation the required number of units to begin your college program.

All applicants for admission, who do not qualify as Maryland residents, as defined in the Appendix, must also have the results of the American College Testing Program and complete high school records submitted to the Admissions Office. Only a limited number of well-qualified out-of-state applicants can be considered for admission since first preference in admission is given to Maryland residents.

### *Pre-College Summer Session*

Any Maryland resident whose scholastic average in major subjects for his junior year in high school and the first semester of the senior high school year falls below the C level will be required to attend the University Pre-College Summer Session.

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\* Consult your high school counselor for information about the American College Testing Program.

The Pre-College Summer Session is held at College Park, Maryland, and is preceded by a brief orientation period. During this session, which runs concurrently with the regular University Summer Session, students will be required to take a full academic workload, including English 1. A special program of advisement and counseling as well as reading and study skills instruction will be provided. Alternatives to this special session, and the achievement required to remain in the University, have been explained to Maryland high school principals and counselors and are contained in a special brochure sent to students required to attend the Pre-College Summer Session.

A student whose average falls below C as noted above MUST HAVE HIS APPLICATION AND HIGH SCHOOL RECORD INCLUDING HIS FIRST SEMESTER SENIOR GRADES IN THE ADMISSIONS OFFICE AT COLLEGE PARK BY OR BEFORE MAY 1, 1965, TO BE CONSIDERED FOR ADMISSION. The American College Test results for students with less than C average must be received by May 22, 1965.

### *How about Mathematics?*

All programs in the University require some college work in mathematics. The student who plans to go to college should be sure to take College Preparatory Mathematics for three and preferably four years. Some programs in the University, for example Engineering, require from three and one-half to four years of College Preparatory Mathematics.

*Courses in General Mathematics, Commercial Mathematics, and Shop Mathematics are not considered as College Preparatory Mathematics.*

### *How about English?*

A considerable portion of the work in English during the freshman year at the University is devoted to expository writing. The high school student should therefore get as much preparation as possible in composition. The student who passes the English Classification test in the top ten percent of his entering class will be placed in an advanced English grouping.

### *Where do you apply?*

The Office of Admissions is chiefly responsible for advising prospective students prior to application for admission and for processing applications when submitted. All inquiries concerning undergraduate work, therefore, should be submitted to:

DIRECTOR, OFFICE OF ADMISSIONS  
NORTH ADMINISTRATION BUILDING  
UNIVERSITY OF MARYLAND  
COLLEGE PARK, MARYLAND

In your first letter of inquiry you should state your educational background and your expected date of graduation from secondary school, your educational objectives, and the date of your expected entrance to the University. You should request application forms for admission. It is not essential that you receive a course catalog for the College in which you are interested prior to your registration.

Part I of your application, accompanied by a \$10 application fee, should be returned to the Office of Admissions at any time after October 1 of your senior year in high school. The fee should be in the form of a check made payable to the University of Maryland and is non-refundable under any circumstance. The fee will be applied in lieu of the matriculation fee provided the applicant enrolls for the term applied for on his application. Applicants who have been enrolled with the University of Maryland in its Evening Division at College Park or Baltimore, or at one of its off-campus centers are not required to pay the fee since they have already paid a matriculation fee.

### *Deadlines for Applications*

#### FALL SEMESTER

All applications for full-time undergraduate admission for the Fall Semester at the College Park campus must be received by the University on or before July 15. Any student registered for seven or more semester hours of work is considered a full-time student.

Under unusual circumstances, applications will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$15 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission, must be received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

#### SPRING SEMESTER

The deadline for the receipt of applications for the Spring Semester is January 1.

### *Orientation Programs*

#### I. THE OFFICIAL NEW FRESHMEN ORIENTATION AND REGISTRATION PROGRAM

Upon final admission to the University you will receive materials pertaining to your participation in The Official New Freshmen Orientation and Registration Program for the University of Maryland. The program is operated at the College Park Campus during the months of July, August and early September. You will attend with a group of your future classmates. During the two days here, you will engage in the following:

1. Formal and informal discussions about University life, the standards the University will expect from you and what you can in turn expect from it.
2. A personal conference with a faculty adviser in your college who will assist you in selecting and registering for fall semester courses.
3. A personalized introduction to campus facilities, sources of help for the problems the typical freshman must face, and out-of-class opportunities.
4. Payment of Fall Semester bills and purchase of your text books if you so desire.



## II. NEW STUDENT WEEK

During the last three days of Fall Registration week, students and faculty combine their efforts to plan a program of value and interest for you. The President of the University delivers his personal message to new students and their parents and greets each new student. Outstanding faculty personnel participate in a series of programs designed to initiate the academic year. Social programs are planned to help you further your contacts with your classmates. Student governing bodies present programs to further acquaint you with the structure of student government and you have an opportunity to meet the people who represent you. Representatives of religious groups and other student organizations are available for you to learn from them the nature of their programs. A special program for parents is planned for the evening of the first day of New Student Week.

### *The Transfer Student*

A student must be in good standing as to scholarship and character to be eligible for transfer to the University. Advanced standing is assigned to a transfer student from an accredited institution under the following conditions: (1) A minimum of one year of resident work or not less than 30 semester hours (including the meeting of all University and curricular requirements) is necessary for a degree; (2) The University reserves the right to make the assignment of transfer credit conditional upon the student's making a satisfactory record during his first semester at the University; (3) The University reserves the right to revoke advanced standing if the transfer student's progress is at any time unsatisfactory.

### *The Special Student*

An applicant who is at least twenty-one years of age, and who has not completed the usual preparatory course, may be admitted to such courses as he seems qualified to take. A special student is ineligible to matriculate for a degree until he has satisfied the entrance requirements.

### *The Unclassified Student*

An applicant who meets entrance requirements but who does not wish to pursue a program of study leading to a degree is eligible for admission to enroll in courses for which he has the prerequisites.

### *The Foreign Student*

The foreign student applying for admission to the undergraduate schools of the University of Maryland should make application at least six months in advance of the term for which he is applying. He will be required to submit an application for admission on a form furnished upon request by the Admissions Office of the University, and official copies of his secondary school preparation, certificates of completion of state secondary school examinations, and records of college or university studies completed in schools in the United States or elsewhere. He will also be required to furnish proof of his ability to read, write, speak, and understand English sufficiently well to pursue satisfac-

torily an approved course of study in one of the Colleges of the University. Arrangements can be made through the office of the Foreign Student Adviser for administering an English test to prospective students both in the United States and in countries abroad.

The foreign student accepted for admission to the University will receive the Immigration I-20 form needed to secure a student visa from the American consul.

Every foreign student is expected to notify the Foreign Student Adviser as to the approximate date of his arrival at the University and arrange to see him as soon as possible after arrival. The office of the Adviser is located in the North Administration Building, Room 222.

## Musts—Physical Education Training and Air Force ROTC Instruction

THE UNIVERSITY IS CONCERNED WITH THE PHYSICAL FITNESS OF EACH student. Therefore, all undergraduate men and women students, classified academically as freshmen registered for more than six semester hours of credit, are required to enroll in and successfully complete two prescribed courses in Physical Education for a total of two semester hours of credit. These courses must be taken by all eligible students during their first year of attendance at the University whether they intend to graduate or not. A health course of two semester hours' credit is required of all undergraduate men and women.

The University operates one of the largest Air Force Reserve Officer Training Corps units in the United States. Successful completion of a one-year sequence is prerequisite for graduation. The sequence must be taken by all men students during the first year of attendance. Those students interested in a career in the Air Force, and who have not yet reached their 25th birthday at the time of initial enrollment in any undergraduate or graduate curriculum, may apply for advanced training in the Air Force Reserve Officer Training Corps upon satisfactory completion of the basic requirements. Successful completion of this advanced training course, and attainment of a baccalaureate degree leads to a commission in the United States Air Force Reserve or a Certificate of Completion.

### *Bases for Exemption From Air Force ROTC Instruction*

1. A student who has completed the basic program in other approved units of the United States Air Force, Army, or Naval ROTC will receive credit.
2. A student holding a commission in the Reserve Corps of the Army, Navy, Marine Corps, Coast Guard, or Air Force will receive credit.
3. A student who has served in the Army, Navy, Marine Corps, Coast Guard, or Air Force for a period of time long enough to be considered equivalent to the training received in the basic AFROTC program will receive credit.





Short periods of service in any of the branches named above will be evaluated and allowed as credit toward completion of the course.

4. Graduate students are exempt.

5. A student classified as a "special student" who is registered for less than seven semester hours is exempt.

6. A student who is 24 years of age or older on or before the first day of scheduled classes for the semester will not be required to initiate or continue his basic AFROTC registration. He may start or continue AFROTC at his own option.

A student who for reason of age does not satisfy in whole or in part the basic AFROTC program will be required to pass an equivalent number of credits, presently within the pattern of the General Education Program, in addition to the basic General Education Program, and in addition to the curriculum requirements of his program of studies and/or college.

The intent of this plan is to give the over-age student an alternative to basic AFROTC, using four semesters of academic credit as the measure of the alternative. It is expected that the courses used as options will advance the same citizenship education purpose as is associated with basic AFROTC.

Any course used as an alternative to AFROTC will require the approval of the dean of the school or college from which the student is graduating and it must be taken at the University of Maryland. Preference will be given to advanced courses in history, government and politics, and English.

7. A student who is physically handicapped may exercise the same option as an over-age student. The physical handicap must be verified by the Director of Student Health. It is expected that many physically handicapped persons will prefer basic AFROTC. They are acceptable in basic AFROTC as they were under former regulations.

8. A student who transfers to the University with advanced standing equivalent to junior status or higher may pursue basic AFROTC semester by semester as permitted in the past, or he may exercise the option outlined for over-age students. The transfer student will be held to four additional semester hours of academic credit if he does not pursue AFROTC.

9. A verified conscientious objector may exercise the four-semester-hour-equivalent option. The criterion for determining this status shall be the same as that used in administering the Universal Military Training and Service Act. Minors must obtain the signature of their parents to exercise this alternative. If the conscientious objector falls into any other category of alternatives (over-age, physically handicapped, transfer at junior level) he may give precedence to the other category.

10. A foreign student, other than one with an immigrant visa, is exempt. He may choose the alternative described previously if he falls in any of the categories to which the alternative applies.

# Where Will I Live?

## *Residence Halls*

TRAINED PERSONNEL ARE EMPLOYED BY THE UNIVERSITY TO ASSIST STUDENTS to administer the residence halls program. These members of the staff, living in the various residence units, are interested in helping students to derive the maximum benefit from the academic, cultural, social and athletic opportunities which are available in group living.

If the student desires living accommodations in a residence hall, he must complete the following steps.

1. Apply for admission to University.
2. Receive (a) notification of admission to University and (b) submit Housing Application.
3. Receive additional information which will include: (a) room assignment priority, (b) conditions of residence hall contract, (c) University rules and regulations, (d) room deposit, and (e) room equipment.

All single undergraduate women under 21 years of age at the time they register must live at home, in University residence halls or sororities, or with close relatives (with approval of parents, relatives, and the Dean of Women). New undergraduate women, 21 years of age or older at the time they register, will not be given residence hall accommodations. Only single women may live in the residence halls. Additionally, neither men nor women graduate students are housed on campus.

## *Off-Campus Housing*

Upperclassmen and veteran male undergraduate students are allowed to live in houses off-campus. Graduates and new undergraduate women 21 years of age or older must live off-campus. All housing arrangements for undergraduate women students must be approved by the Office of the Dean of Women. A list of rooms, apartments and houses available to all persons associated with the University is located in the Housing Office on the third floor of the North Administration Building. Most of the off-campus houses have double rooms with twin beds and provide linens and towels. Some require that you furnish your own bed linens. The price for a person in a double room is about \$25 a month. Single rooms rent from \$30-\$50 per month.

## *Family Housing Units*

The University maintains a limited number of unfurnished married housing units on the campus. Efficiency units for families with no children rent for \$42.50 per month and consist of a living room-bedroom combination, kitchen and bath. One bedroom units are for families with one child and rent for \$45.50 per month.

To be eligible, undergraduate students must take at least 15 hours credit per semester. Graduate students, other than those with teaching fellowships and assistantships, must take 10 hours credit per semester. To be eligible you cannot have a total income of more than \$4,500 per year. Units are not available to families with more than one child, and that child cannot be over five

## IMPORTANT NOTICE

**T**HE STATEMENTS IN THIS BOOKLET ARE FOR INFORMATION ONLY. The provisions of this publication *do not* form a contract between the student and the University of Maryland.

Official notice concerning student life, grading systems and other regulations are to be found in the publication *University General and Academic Regulations*, made available to all incoming students.

The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

years of age. It is necessary that you be officially admitted to the University before the application can be considered active. Applications for these units may be obtained from the Housing Office.

### *Lord Calvert Apartments*

The Lord Calvert Apartments in College Park were acquired by the University to alleviate the critical need for housing for married students. Intended primarily as a housing facility for married graduate teaching assistants who are employed in the instructional programs at College Park, the Lord Calvert complex offers units with one bedroom and dining alcove; one bedroom and dining room, and two-bedroom units with dining rooms.

## How Much Will It Cost?

**T**HE TABLE FOLLOWING PRESENTS ESTABLISHED CHARGES FOR ATTENDING the University of Maryland in the undergraduate programs offered on the College Park campus.

### Fees for Undergraduate Students

Maryland Residents	First Semester	Second Semester	Total
FIXED CHARGES . . . . .	\$130.00	\$120.00	\$250.00
INSTRUCTIONAL MATERIALS FEE . . . . .	12.00	12.00	24.00
ATHLETIC FEE . . . . .	20.00	. . .	20.00
STUDENT ACTIVITIES FEE . . . . .	12.00	. . .	12.00
SPECIAL FEE . . . . .	15.00	. . .	15.00
RECREATIONAL FACILITIES FEE . . . . .	25.00	. . .	25.00
<b>Total for Residents</b>	<b>\$214.00</b>	<b>\$132.00</b>	<b>\$346.00</b>



## Residents of the District of Columbia, Other States and Countries

TUITION FEE FOR NON-RESIDENT STUDENTS			
	\$200.00	\$200.00	\$400.00
<b>Total for Non-Residents</b>	<b>\$414.00</b>	<b>\$332.00</b>	<b>\$746.00</b>

### Board and Lodging

BOARD	\$210.00	\$210.00	\$420.00*
LODGING			
MARYLAND RESIDENTS	145-160	145-160	290-320**
OTHER STATES AND COUNTRIES	170-185	170-185	340-370***

\* All students who live in the residence halls must take their meals in the University Dining Halls. \*\* Effective September, 1965 annual fee for men will be \$320. \*\*\* Effective September, 1965 annual fee for both men and women will be \$420.

For complete information concerning fees see Appendix A.

### *How About Grants and Scholarships?*

For promising young men and women who might not otherwise be able to provide themselves an opportunity for higher education, a number of grants and scholarships are available. New students must apply before March 15. Students already enrolled may apply before May 1. All requests for information concerning these awards should be directed to:

DIRECTOR, STUDENT AID  
UNIVERSITY OF MARYLAND  
COLLEGE PARK, MARYLAND

In deciding whether you are eligible to receive a grant or a scholarship, the Committee considers such qualifications as leadership, character, achievement, and participation in student activities, as well as academic ability and financial need.

You should know of the major groupings of grants and scholarships. These are:

FULL UNIVERSITY SCHOLARSHIPS—covering board, lodging, fixed charges, fees and books;

UNIVERSITY GRANTS—awarded to deserving and qualified secondary school graduates covering fixed charges only;

GENERAL ASSEMBLY GRANTS—for fixed charges only, awarded by members of the State Legislature, three for each Senator and one for each member of the House of Delegates, only to persons in the county or in the legislative district of Baltimore City which the Delegate or Senator represents;

SPECIAL ACADEMIC SCHOLARSHIPS—awarded to students of exceptional academic ability by the Committee on Scholarships and Grants-in-Aid;

ENDOWED SCHOLARSHIPS AND GRANTS—supported by income from funds especially established for this purpose;

TEACHER EDUCATION GRANTS—for fixed charges only, available to Maryland residents who agree to teach in Maryland public school for two years;

GENERAL STATE TUITION SCHOLARSHIPS—for fixed charges only, awarded by the State Scholarship Board on the basis of an examination.



### *Can You Work Your Way Through College?*

A number of students are employed on a part-time basis by the University, others work in various capacities in shops and stores located in the College Park area. If you seek employment while pursuing a regular program of instruction, you should consult the Office of Student Aid who maintains a listing of available jobs within the University and in nearby commercial areas including holiday and summer employment.

### *Are Loans Possible?*

Several loans are made available by private organizations to worthy students in financial need.

Under provisions of United Student Aid Funds, qualified students may borrow up to \$1000 per year from home-town banks.

Under the will of Catherine Moore Brinkley, a loan fund is available for worthy students who are natives and residents of Maryland.

Under provisions of the National Defense Education Act, loans are available to qualified students in amounts not to exceed \$800 per year.

### *Teacher Education?*

In order to provide a greater supply of qualified teachers for the public schools of Maryland, residents of Maryland may have the fixed charges remitted while pursuing successfully a teacher preparation program.

The following conditions pertain to the administration of the program:

1. The student must be a resident of the State of Maryland as defined in this publication. This resident status must be maintained in order to continue the effectiveness of the agreement.
2. The student must be a citizen of the United States of America.
3. The student must be regularly admitted to the University for the pursuit of a baccalaureate degree.
4. The student must be enrolled as a full-time student pursuing a curriculum leading to teacher certification in accordance with University regulations. Fifteen semester hours of credit shall constitute a full-time schedule for persons who have their fixed fees remitted at the University of Maryland.

Each applicant eligible to participate in the reimbursed program will be required to sign a pledge to teach in the public schools of Maryland for a period of two years, immediately following graduation. A reimbursement agreement must be signed to cover the contingency of not satisfying the teaching requirement. A more detailed explanation is available upon request.

Persons enrolled in the summer session or in any of the late afternoon and evening programs are not covered by this fee remission program.

## Extracurricular, Social and Religious Life

ORGANIZED STUDENT ACTIVITIES ARE RECOGNIZED AND ENCOURAGED for the growth of your leadership and citizenship skills. Opportunities are open in student government, fraternities, sororities, special interest clubs, civic groups, service organizations, professional organizations, recreational organizations, religious clubs, and musical organizations. You may be interested in joining the



band or the staff of one of the student publications. You may be interested in athletics or perhaps you will want to become a member of a club or society which has a primary interest in the informal investigation of an academic specialty. Interested faculty personnel are active in all of these groups.

The Student Government Association represents all students and operates under an approved constitution and by-laws. The Associated Women Students, in cooperation with the Dean of Women, is concerned with matters pertaining to women students. The Men's League, in cooperation with the Dean of Men, is concerned with matters pertaining to men students.

The University Band is under the supervision of the Department of Music and is composed of four groups: the Marching Band, the Symphonic Band, the Air Force ROTC Band, and the Pep Band.

Five student communications and publication media are operated with faculty guidance and the general supervision of the Committee on Student Publications and Communications. They are: *The Diamondback*, the campus newspaper; *The Terrapin*, the student yearbook; *The M Book*, the student handbook; *Calvert Review*, campus literary magazine; and WMUC, the campus radio station.

### *Athletics and Recreation*

The University recognizes the importance of the physical development of all students and, in addition to the required physical education for freshmen and sophomores, sponsors a comprehensive intercollegiate and intramural program. Students are encouraged to participate in competitive athletics and to learn the skill of games that may be carried on after leaving college. The intramural program, which covers a large variety of sports, is conducted by the Physical Education Department for both men and women.

The Council on Intercollegiate Athletics sponsors and supervises a full program of intercollegiate athletics in every form necessary to meet the needs of the student body. By keeping this program in proper bounds, it becomes an incidental feature of University life. Each student is encouraged to participate in the program, either as an athlete or as a spectator. A strong intercollegiate program creates the incentives for extensive participation in the intramural program and, further, the program furnishes a rallying point of common interest for students, alumni, and faculty.

The University is a member of the Atlantic Coast Conference, the National Collegiate Athletic Association, the United States Intercollegiate Lacrosse Association, the Intercollegiate Amateur Athletic Association of America, and cooperates with other national organizations in the promotion of amateur athletics.

The University has an activities building which contains a modern gymnasium, a swimming pool, training facilities for indoor sports, physical education laboratories, and an arena; also a large armory; a modern stadium with a running track; a number of athletic fields; tennis courts; golf course; baseball diamonds; and a gymnasium and swimming pool for women.

### *To Round Out Your Experience*

The Student Government Association's Cultural Committee, University Theatre, and the musical groups present a broad program of musical, cultural, and dramatic programs. The National Symphony presents several concerts

during the year. A Broadway musical and an opera are given annually. Recent talent brought to the campus includes Modern Jazz Quartet, Don Cossack Dancers, Ferrante and Teicher and Miriam Makeba, and the Ximenez-Vargas Spanish Ballet. Contemporary entertainment is presented throughout the year by various student organizations. A series of informational programs and art exhibits are presented by the Student Union.

All campus or class wide social events are associated with Homecoming, and the Freshman, Sophomore, Junior, and Senior Proms. Name bands such as Tommy Dorsey, Warren Covington, and Sy Zentner have appeared at these affairs.

Fraternities, sororities and residence halls also sponsor social events throughout the year including exchange socials and open houses from time to time.

The All-Faith Memorial Chapel is one of the most beautiful structures of its kind in the nation. Within its shelter are housed the offices of chaplains, representing the denominational bodies, and there are many opportunities for you to consult with the minister of your faith. Chances are that you will want to join a religious club such as the Baptist Student Union, Canterbury Association (Episcopal), Christian Fellowship (non-denominational), Christian Science, Diogenes Society (Unitarian), Ethos (Eastern Orthodox), Hillel Foundation (Jewish), Lutheran Students Association, Newman Club (Roman Catholic), Westminster Foundation (Presbyterian), and the Wesley Foundation (Methodist).

## Academic Standards

THE STUDENT WHO MAINTAINS AT LEAST A "C" AVERAGE IN ACADEMIC SUBJECTS is proceeding satisfactorily toward graduation. The student who does not maintain this average is falling behind.

The student who fails fifty percent or more of his academic work will normally not be permitted to continue. Special provisions, however, are made for the student who has difficulty in the first semester of his freshman year. The student who fails more than 35 percent of his academic work in any semester or who fails to make a minimum 1.5 average for the academic year will be placed on academic probation. Each student must earn junior standing within a specified time in order to be eligible to continue in the University.

The regulations governing junior standing, academic probation, and academic dismissal are printed in a separate publication, *University General and Academic Regulations*. Every student should familiarize himself with these regulations.

High school students who have an average of less than "C" in their academic subjects, as specified by the Director of Admissions, will be required to attend the Pre-College Summer Session prior to acceptance by the University of Maryland.

## Student Services

### *Student Health*

The University recognizes its responsibility for safeguarding the health of its students. All new, full-time, day, undergraduate students are required to undergo a thorough physical examination prior to their admission and to pay the annual

Health Service Fee. Full-time graduate students are also required to pay this fee. Excellent commercial Accident and Sickness Insurance, sponsored by the University, is also available. A new well-equipped and staffed Infirmary is available for the treatment of sick or injured students who have paid the Health Service fee.

All dormitories, off-campus houses, sorority and fraternity houses, the Food Service and certain other areas are inspected periodically by the Student Health Service to make certain that proper sanitary conditions are maintained.

Group Accident Insurance, issued by a national company, is available to domestic students on a voluntary basis. All foreign students are required to have accident and sickness insurance coverage in reasonable amounts and comparable to that offered our domestic students.

### *University Counseling Center*

The Counseling Center assists students in gaining a better understanding of themselves and in developing improved methods of coping with vocational, educational and personal problems. Both individual and group methods of counseling are used. Where psychological testing is appropriate in the counseling of students, tests of ability, interest and personality are employed.

Through its Reading and Study Skills Laboratory, the Center provides an extensive program for students motivated to improve their reading and listening skills, study methods, vocabulary and/or spelling.

Students are entitled to the services of the Center without charge since they annually pay an advisory and testing fee at the time of registration.

The Counseling Center is located in Shoemaker Building.

### *Placement and Credentials Service*

Full-time career employment for graduating seniors and alumni is available through the University Placement and Credentials Service. In addition an Opportunity Series is sponsored throughout the school year to assist students in vocational planning.

### *University Post Office*

The University operates an office located in the Service Building, for the reception and dispatch and delivery of the United States mail, including parcel post items and inter-office communications. This office is not a part of the U. S. postal system and no facilities are available for the reception or transmission of postal money orders and all registered and insured mail must be picked up at the United States Post Office in the City of College Park. The campus post office hours are 8:30 a.m. to 4:00 p.m., Monday thru Friday. Resident students' mail will be delivered directly to the dormitories. All communications addressed to non-resident and/or commuting students must be mailed to their home addresses as there is no provision in the University Post Office for handling mail for these students.

### *The Student Union*

The enlarged and improved Student Union has much to offer the student and faculty in facilities and services.

The cafeteria, with seating for approximately 450, offers a complete line of hot lunches and dinners served daily from 11:00 a.m. to 2:00 p.m. and 4:45 p.m.



to 7:30 p.m. The remodeled snack bar serves breakfast and light lunches plus snacks throughout the day from 7:00 a.m. to 10:30 p.m.

The Student Supply Store makes available for University personnel all classroom needs in texts and supplies plus an assortment of clothing, cards, novelties and jewelry.

At the Union shop all sorts of candy and many personal articles are available.

For those hours of leisure you may find relaxation on one of the Union's 16 automatic ten pin bowling lanes which are open from 9:00 a.m. to 11:00 p.m. daily and slightly later on the weekends. Or perhaps you might enjoy a game of billiards in the new twelve table billiard room. Chess and bridge are here too, as these long-standing University clubs meet regularly in the Union.

If reading is your choice, visit the browsing room where a wide selection of novels and the latest selection of magazines are stocked for your pleasure. Then too there is a Hi-Fi Stereo listening lounge where daily planned programs of fine music are heard.

As to Union services, there is a check cashing facility in the main office where personal checks up to \$10.00 may be cashed Monday through Friday from 9 a.m. to 3:00 p.m. for a small service charge. If you have ditto or mimeographing needs, these duplicating services may be obtained here for a nominal cost. A Union poster service, providing a variety in printed signs, may also be utilized for a small cost.

Should any University recognized organization or club wish to hold a meeting there are many rooms of varying size which may be had in the Union. Those wishing a room are required to complete a reservation form in the Union Office several days in advance. Requests for light refreshment can be handled too; however, no food may be brought into the building.

The Student Union also has for use outside of the building at a small rental fee such items as .16mm sound movie projectors, screens, P.A. systems, slide projectors, certain kitchen equipment such as three and five gallon thermos jugs, and silver service.

The hours of operation listed here for any of the facilities of the Student Union are subject to change without notice depending on the needs of operating efficiency.

## General Education Program

THE UNIVERSITY HAS INSTITUTED A NEW SERIES OF RELATED COURSE REQUIREMENTS which together constitute a general education program.

Essentially this program includes nine semester-hour-credits of English (three credits of composition, six of literature); six credits in history of which three must be in American history; six credits chosen from various fields of the social sciences; seven credits in science; three credits in mathematics; three credits in fine arts or in philosophy. As explained before, two semesters of physical education and a course in health education are required of all undergraduates.

Greater detail will be found in the publication: *General and Academic Regulations, 1965-1967.*



## COLLEGE OF AGRICULTURE

**T**HE COLLEGE OF AGRICULTURE OFFERS A NUMBER OF CURRICULUMS TO prepare students for a wide variety of rewarding careers. These curriculums prepare the student for useful, informed citizenship with a basic understanding of science in general and the science of agriculture in particular. All four-year programs lead to the Bachelor of Science degree.

Modern agriculture is a highly complex and extremely efficient industry which includes supplies and services used in agricultural production, the production process itself, and the marketing, processing and distribution of food and related products to meet the needs and wants of consumers.

Instruction in the College of Agriculture emphasizes the fundamental sciences and associated areas of knowledge that its graduates must use in the agriculture of the future. When necessary, course programs in specialized areas may be tailored to fit the needs of the student.

Previous training in agriculture is not a pre-requisite for enrollment. Career opportunities for men and women with rural, suburban, or urban backgrounds are numerous in agriculture and its allied industries.

Graduates of the College of Agriculture have a broad base for rewarding careers and continued learning after college in business, production, teaching, research, extension and other professional fields. Students may major in Agricultural Chemistry, Agricultural Economics, Agricultural Engineering, Agricultural and Extension Education, Agronomy, Animal Science, Botany, Dairy Science, Entomology, Horticulture, Poultry Science, General Agriculture and Pre-Professional Programs. Some of the careers which graduates of specific curriculums may select are:

**ANIMAL, PLANT AND SOIL SCIENCE.** Animal, plant and soil scientists utilize the principles of nutrition, physiology, breeding and selection, management, sanitation, and insect and disease control in producing quality plants and animals in sufficient quantities and varieties to meet effectively and efficiently the needs of consumers. Curriculums in animal, plant and soil science combine a sound basis in fundamentals with specialized area options to prepare individuals for the wide range of careers in the many aspects of the production, management, sales, research, teaching and extension.

**FOOD SCIENCE.** The food scientist applies the fundamentals of chemistry, physics, microbiology, sanitation, nutrition, management, and quality control to the problems of procurement, processing, packaging and marketing of nutritious and aesthetically satisfying foods. Graduates in food science are trained in the basic sciences and associated subjects for careers in production, management, research, product development, quality control, teaching, extension, marketing, human nutrition and personnel relations in the food processing industry.

**AGRICULTURAL ECONOMICS.** The agricultural economist deals with the application of economic principles to the many facets of the total business of agriculture and other industries and occupations. He applies a knowledge of economics, mathematics, statistics, business management, finance, accounting, and agricultural science to the challenging opportunities found in the agricultural supply and service, production, and marketing industries. He may become a professional manager, and apply his knowledge to the fields of production economics, the agricultural marketing system, the operation of supply firms or service organizations. He may become a market analyst, researcher, teacher, extension worker, agricultural statistician, agricultural credit specialist, foreign trade representative, or one of a growing list of professional occupations in government and industry which utilize his knowledge. As agriculture becomes more scientific, more efficient, more specialized, more competitive, the agricultural economist will be faced with an increasingly important future role.

**AGRICULTURAL ENGINEERING.** The agricultural engineer is primarily concerned with that area of bio-engineering for controlling or modifying natural environment for the economic production and processing and utilization or marketing of plant and animal products. Agricultural engineers integrate the physical, mathematical and engineering sciences with their many applications in agriculture. Careers for graduates are found in the design or manufacturing of farm machinery or in sales and service positions in farm machinery distribution; in soil and water conservation engineering including water resources development; in the electrification, automation and mechanization of farmstead systems; in the development or adaptation of new materials or new designs in farm structures; systems for handling agricultural materials; and in the processing of agricultural products.



AGRICULTURAL AND EXTENSION EDUCATION. The agricultural and extension educator has a broad general training in agriculture with basic work in natural sciences, social sciences, humanities and specialized courses in education methods. A variety of educational career opportunities in vocational agriculture, county agricultural extension work, government, business, industry, college and other related fields are available.

PRE-PROFESSIONAL PROGRAMS:

PRE-VETERINARY SCIENCE. This program is designed for students desiring to prepare for the professional course in veterinary medicine. A combined degree is available to students in pre-veterinary science. A student who has completed 90 academic semester credits at the University of Maryland and who has completed 30 additional academic semester credits at the University of Georgia or at any accredited veterinary school is eligible to make application for the Bachelor of Science degree from the University of Maryland.

PRE-FORESTRY. This program is designed for students who may want to pursue two years of basic study in preparation for transfer to a standard forestry curriculum in another institution.

PRE-THEOLOGICAL. This program is designed for students who desire some basic background education in agriculture as preparation for the ministry.

A Two-Year Program in Agriculture is offered for students who wish to spend only a limited time beyond high school to prepare for a specialized occupation.

HONORS PROGRAM. The College of Agriculture initiated its Honors Program in 1963, in recognition of superior scholarship for excellent students.

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

FIRST SEMESTER	SECOND SEMESTER
<i>English</i>	<i>English</i>
<i>Government &amp; Politics</i>	<i>Sociology, Philosophy or</i>
<i>R. O. T. C. (men)</i>	<i>Psychology</i>
<i>Science &amp; Theory of Health</i>	<i>R.O.T.C. (men)</i>
<i>Agriculture</i>	<i>Zoology</i>
<i>Botany</i>	<i>Agricultural electives</i>
<i>Agricultural electives</i>	<i>Physical Activities</i>
<i>Physical Activities</i>	

RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i> .....	<i>4 units</i>
<i>Mathematics (College Preparatory)</i> .....	<i>2 units</i>
<i>(Algebra 1 unit and Plane Geometry 1 unit—Agricultural Engineering and Agricultural Chemistry require 2 additional units)</i>	
<i>Biological and Physical Sciences</i> .....	<i>3 units</i>
<i>History and Social Sciences</i> .....	<i>2 units</i>

Two units of foreign language are recommended for students planning to major in Agricultural Engineering, Agricultural Chemistry, Botany and Entomology.

# COLLEGE OF ARTS AND SCIENCES

## BACHELOR OF ARTS

THE COLLEGE OF ARTS AND SCIENCES OFFERS ITS STUDENTS A LIBERAL education. It seeks to develop graduates who can deal intelligently with the problems which confront them and whose general education will be a continuing source not only of material profit, but of genuine personal satisfaction. The programs combine liberal education with special concentration in one or more of the basic intellectual or artistic disciplines.

A liberal arts education is the normal preparation for the student who plans to go to law school; to a post-graduate or professional school of business administration, library science or social service; or to a theological seminary.

The student interested in research (business and industry, government, university) and in college teaching will receive the undergraduate preparation necessary for the graduate work required in these fields.

By including the appropriate courses in education, a student in some of these areas can qualify for public school teaching. For students interested in foreign service, the foreign area programs combine intensive study of a language with study of the civilization of the area. Other special fields in business and government are open to the student who completes a liberal arts education with a suitable concentration in a single field of study.

Specialized programs are also offered in the fine arts (art, drama, music) and in speech therapy.

### FOUR YEAR BACHELOR OF ARTS DEGREE PROGRAMS

*American Studies*

*Art\*\**

*Comparative Literature*

*Economics\**

*English*

*Foreign Area Studies (French, German, Latin American, Russian, Spanish)*

*French*

*Geography\**

*German*

*Government and Politics\**

*Greek*

*History*

*Latin*

*Music (see also Bachelor of Music degree)*

*Philosophy*

*Psychology*

*Russian*

*Sociology (including also a program in Crime Control)*

*Spanish*

*Speech (including also programs in Dramatic Art and in Speech Therapy)*

\* Programs in these fields are also offered in the College of Business and Public Administration.

\*\* A program in Practical Art is offered in the College of Home Economics. A student may also earn a degree in Art Education.

PRE-LAW. A three year program, followed by three years of Law at the University of Maryland Law School, leads to the A. B. and LL.B. degree. Pre-law students may also follow any of the four-year programs and earn the Bachelor of Arts degree before entering law school.

BACHELOR OF MUSIC. Four year program leading to the Bachelor of Music degree. Professional training in theory-composition, history-literature, and applied music (voice or instrument).

### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

Typical program for the freshman year for students following a program leading to the Bachelor of Arts degree:

#### FIRST SEMESTER

*English*  
*Science or Mathematics*  
*Foreign Language*  
*Fine Arts or Philosophy*  
*Public Speaking*  
*R. O. T. C. (men)*  
*Physical Activities*  
*Science & Theory of Health*

#### SECOND SEMESTER

*Public Speaking*  
*Science or Mathematics*  
*Foreign Language*  
*Social Science*  
*Elective*  
*R. O. T. C. (men)*  
*Physical Activities*

### RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i> .....	<i>4 units</i>
<i>Mathematics</i> .....	<i>3 or 4 units of College</i>
	<i>Preparatory Mathematics</i>
<i>Biological and Physical Sciences</i> .....	<i>1 or more units</i>
<i>History and Social Sciences</i> .....	<i>1 or more units</i>
<i>Foreign Languages and Latin</i> .....	<i>2 or more units</i>

### BACHELOR OF SCIENCE

THE PROGRAM IN EACH OF THE SCIENCE FIELDS COMBINES LIBERAL EDUCATION with a concentration in one of the basic sciences or in mathematics. The graduates of these science programs are prepared for specialized positions in industry and government.

The student in these science programs can also gain the preparation necessary for admission to the professional schools of medicine and dentistry or for admission to graduate work leading to advanced degrees in Mathematics, Chemistry, Physics, and the Biological Sciences. Research work (industry, government, university) and college teaching are among the possibilities open to the student who successfully completes an undergraduate and graduate program in mathematics or one of the basic sciences.



## FOUR YEAR BACHELOR OF SCIENCE DEGREE PROGRAMS

*Astronomy*  
*Botany\**  
*Chemistry*  
*Mathematics*  
*Microbiology*

*Physics*  
*Psychology*  
*Zoology*  
*General Biological Sciences*  
*General Physical Sciences*

\* *A curriculum in Botany is also offered in the College of Agriculture.*

PRE-MEDICAL AND PRE-DENTAL PROGRAMS. There are three-year programs meeting minimum requirements for medical school or dental school. A four-year program in any of the major fields in the College of Arts and Sciences leading to an A. B. or B. S. degree can prepare a student for professional schools. Only exceptionally strong and mature students should consider the three-year pre-medical curriculum.

### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

#### FIRST SEMESTER

*Public Speaking*  
*Mathematics*  
*Science (one or more of the  
 introductory courses)*  
*Social Science*  
*R. O. T. C. (men)*  
*Health*  
*Physical Activities*

#### SECOND SEMESTER

*English*  
*Mathematics*  
*Science (continued)*  
*American Government*  
*Public Speaking*  
*R. O. T. C. (men)*  
*Physical Activities*

For the pre-medical and pre-dental student . . .

#### FIRST SEMESTER

*Philosophy*  
*Mathematics*  
*Chemistry*  
*Zoology*  
*R. O. T. C. (men)*  
*Science & Theory of Health*  
*Physical Activities*

#### SECOND SEMESTER

*English*  
*Mathematics*  
*Chemistry*  
*Zoology*  
*R. O. T. C. (men)*  
*Physical Activities*

### RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i> . . . . .	4 units
<i>Mathematics</i> . . . . .	4 units of College Preparatory Mathematics
<i>Biological and Physical Sciences</i> . . . . .	1 or more units, including Chemistry and Physics, if possible
<i>History and Social Sciences</i> . . . . .	1 or more units
<i>Foreign Languages and Latin</i> . . . . .	2 or more units

COLLEGE OF BUSINESS  
AND PUBLIC ADMINISTRATION

FOUR-YEAR PROGRAMS LEADING TO THE BACHELOR OF SCIENCE DEGREE ARE offered by the College of Business and Public Administration. Students may complete the four-year program in a shorter period of time by attending summer sessions. They may choose their programs of study from the offerings of the following departments: Department of Business Administration, Department of Economics, Department of Geography, Department of Government and Politics, Department of Information Systems Management and Department of Journalism and Public Relations.

Students expecting to enroll in the College of Business and Public Administration at the University of Maryland should pursue the pre-college program in high school. Those who follow the commercial studies curriculum in high school are usually not prepared to meet the requirements of the College. The College recommends the following preparation in high school:

RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i> .....	<i>4 units.</i>
<i>Mathematics</i> .....	<i>3 or more units of College Preparatory Mathematics; including a minimum of 2 units of Algebra and 1 of Geometry.</i>
<i>History and Social Sciences</i> .....	<i>1 or more units.</i>
<i>Natural Science</i> .....	<i>1 or more units.</i>
<i>Foreign Languages</i> .....	<i>1 or more units.</i>

DEPARTMENTAL PROGRAMS OF STUDY

Before concentrating heavily in any of the College's special fields of study, all students follow during their first two years an educational program that provides a foundation upon which to base advanced work in the management or social sciences or in journalism. The first two years constitute, therefore, a major part of the general education that the University offers and an opportunity to learn something of the nature of different professional and scholarly fields.

With the exceptions noted below, all departments within the College require the following as a part of the freshman-sophomore program of study:

<i>English</i> .....	<i>9 semester hours</i>
<i>Mathematics</i> .....	<i>6</i>
<i>History</i> .....	<i>6</i>
<i>Social science</i> .....	<i>6</i>
<i>Natural science</i> .....	<i>7-8</i>
<i>Fine arts and philosophy</i> .....	<i>3</i>
<i>Economics</i> .....	<i>6</i>

By way of exception, the Departments of Geography and Journalism and Public Relations require a minimum of 3 hours of mathematics. Majors in government and politics and in the general program in geography are required to have at least 12 hours of a foreign language.

Students must also meet University requirements in health, physical activities and air science.

**BUSINESS ADMINISTRATION.** Programs: General Program in Business Administration; Accounting; Finance; Marketing; Personnel & Industrial Relations; Production Management; Statistics; Transportation.

Upon completion of requirements for the degree, students following any of these programs will have had the advantage of a broad general education, a firm understanding of the internal characteristics and external relationships of business, and a professional training focused upon one of the major lines of managerial activity.

All students in business administration follow the same course of study for the first two years. In addition to the general requirements cited above, students take courses in speech, business enterprise, and accounting during the freshman-sophomore years. The junior-senior years are devoted to the requirements of the major plus such complementary courses as are deemed desirable for the completion of a sound general education.

Students who major in one of the areas of business administration often enter business or government immediately after graduation, but their undergraduate programs also prepare them for graduate study in business.

**ECONOMICS.** Students wishing to major in economics and to earn the degree of Bachelor of Science may register in the College of Business and Public Administration, the College of which the Department of Economics is administratively a part. (Under a slightly different set of requirements, students may major in economics in the College of Arts and Sciences.) The first two years are devoted to the general requirements plus an additional course in economics, a course in speech, and electives. The junior-senior years are devoted to the requirements of the major, and to elective courses. An honors program in economics is available to students who demonstrate the capacity for outstanding achievement.

Students majoring in economics may look forward to careers in business and government and, after graduate study, to college teaching and to research in many different types of organization.

**GEOGRAPHY.** Programs: General Program in Geography; Cartography; and Urban Geography.

Three programs of study are offered by the Department of Geography to students in the College of Business and Public Administration. The same programs are available—under a slightly different set of requirements—in the College of Arts and Sciences.

All majors in geography devote the first two years to the general requirements and to certain courses in geography. Majors may follow a general program or may concentrate in the area of urban geography or cartography. All geography majors are required to complete 8 hours of science, and general geography majors must complete 12 hours of foreign language. Graduates usually enter teaching, industry, and agencies of state, local or national government.

**GOVERNMENT AND POLITICS.** Programs: General Program in Government and Politics; International Affairs; and Public Administration.



Three programs of study are offered by the Department of Government and Politics to students in the College of Business and Public Administration: (1) a general program in government and politics, (2) a program in international affairs, and (3) a program in public administration. (Under a slightly different set of requirements the general program and the international affairs program are offered also to students in the College of Arts and Sciences. The public administration program is available only in the College of Business and Public Administration.) In all three programs, the first two years are devoted to the general requirements, along with additional courses in government and politics and elective courses. All students are required to complete at least 12 hours of a foreign language. Majors may concentrate in the general program, in international affairs, or in public administration. The junior-senior years are devoted to the advanced government and politics courses and to courses considered complementary to a particular program. Graduates enter upon careers in national, state and local and international organizations and, especially after graduate studies, in teaching.

**INFORMATION SYSTEMS MANAGEMENT.** This department offers a program conceived to meet the needs of the rapidly expanding area of information technology as related to business management and to the areas of social science offered as a part of the College curriculum. In addition to the general requirements previously outlined, the program requires a second year of college mathematics. Supporting courses in accounting and in statistics are required. Courses in integrated data processing and in other aspects of computer utilization are features of the program.

Industry and government offer an increasing number and variety of opportunities to graduates of college programs in this new field.

**JOURNALISM AND PUBLIC RELATIONS.** Programs: Journalism; and Public Relations.

Students aspiring to become reporters, commentators, editors and publishers may follow the program in journalism. If they have certain of the other forms of communications activity in mind, they may major in the field of public relations.

Students pursuing a major in this department devote the first two years to meeting the general requirements, along with 6 hours of journalism and certain electives. The junior-senior years are devoted to the advanced journalism and public relations courses, and to courses complementary to these areas of study.

**THE PRE-LAW PROGRAM.** Students majoring in general business may, upon completion of 90 semester hours, apply for admission to the University of Maryland Law School. Upon completion of one year of law school, they are awarded the B.S. degree. With the completion of two additional years of law, they receive the Bachelor of Laws degree. Apart from the pre-law program, students who complete the four-year program with majors in business administration, economics, or government and politics are eligible to apply for admission to law school.

### *Additional Information*

High school counselors and others desiring more specific information on the programs of the College of Business and Public Administration are invited to direct queries to the Assistant Dean, College of Business and Public Administration, University of Maryland, College Park, Maryland.



## COLLEGE OF EDUCATION

**T**HE COLLEGE OF EDUCATION OFFERS CURRICULUMS LEADING TO CAREERS IN teaching on all levels and in most specialties of education. This wide diversity of choices provides desirable flexibility and breadth. All curriculums are four-year programs and lead to full certification as a teacher and a bachelor of science or arts degree. The specific curriculums are:

**ACADEMIC EDUCATION (SECONDARY SCHOOLS).** English, foreign languages, mathematics, social sciences, science, speech.

**AGRICULTURAL EDUCATION (SECONDARY SCHOOLS; OFFERED BY THE COLLEGE OF AGRICULTURE)**

**ART EDUCATION (SECONDARY AND ELEMENTARY SCHOOLS)**

**BUSINESS EDUCATION (SECONDARY SCHOOLS)**

**EARLY CHILDHOOD EDUCATION (NURSERY SCHOOL, KINDERGARTEN AND PRIMARY GRADES)**

**ELEMENTARY EDUCATION (ELEMENTARY SCHOOLS; GRADES 1-6)**

**HOME ECONOMICS EDUCATION (SECONDARY SCHOOLS; VOCATIONAL OR GENERAL)**

**INDUSTRIAL EDUCATION (SECONDARY SCHOOLS; INDUSTRIAL ARTS OR VOCATIONAL-INDUSTRIAL EDUCATION)**

**EDUCATION FOR INDUSTRY (A NON-TEACHING PROGRAM WHICH PREPARES STUDENTS FOR EDUCATIONAL, SUPERVISORY OR MANAGEMENT POSITIONS IN INDUSTRY)**

\*LIBRARY SCIENCE

MUSIC EDUCATION (ELEMENTARY AND SECONDARY SCHOOLS; VOCAL OR INSTRUMENTAL)

PHYSICAL EDUCATION AND HEALTH EDUCATION, IN COOPERATION WITH COLLEGE OF PHYSICAL EDUCATION, RECREATION AND HEALTH (SECONDARY AND ELEMENTARY SCHOOLS)

\*SPECIAL EDUCATION

Majors in English, social sciences, language, and art receive the B. A. degree. Majors in mathematics may receive either degree. Majors in all other fields receive the B. S. degree.

SPECIAL FACILITIES AND PROGRAMS

The Science Teaching Center maintains an up-to-date collection of science teaching materials and publications. The Institute for Child Study offers leadership to child study groups in Maryland and throughout the United States. The Industrial Education building offers modern shops and laboratory facilities. The Nursery-Kindergarten Laboratory School offers observation and participation experiences to students in the early childhood program as well as to students in other fields. Area public schools are also used extensively. A Bureau of Educational Research and Field Services offers consultant assistance to the schools of the state.

TYPICAL PROGRAM FOR THE FRESHMAN YEAR

FIRST SEMESTER

*English*  
*Art or Music*  
*Mathematics or Science*  
*Social Science*  
*Elective or Language*  
*Physical Education*  
*Science & Theory of Health*  
*R.O.T.C. (Men)*

SECOND SEMESTER

*Social Science*  
*Science*  
*Speech*  
*Elective or Language*  
*Physical Education*  
*R.O.T.C. (Men)*

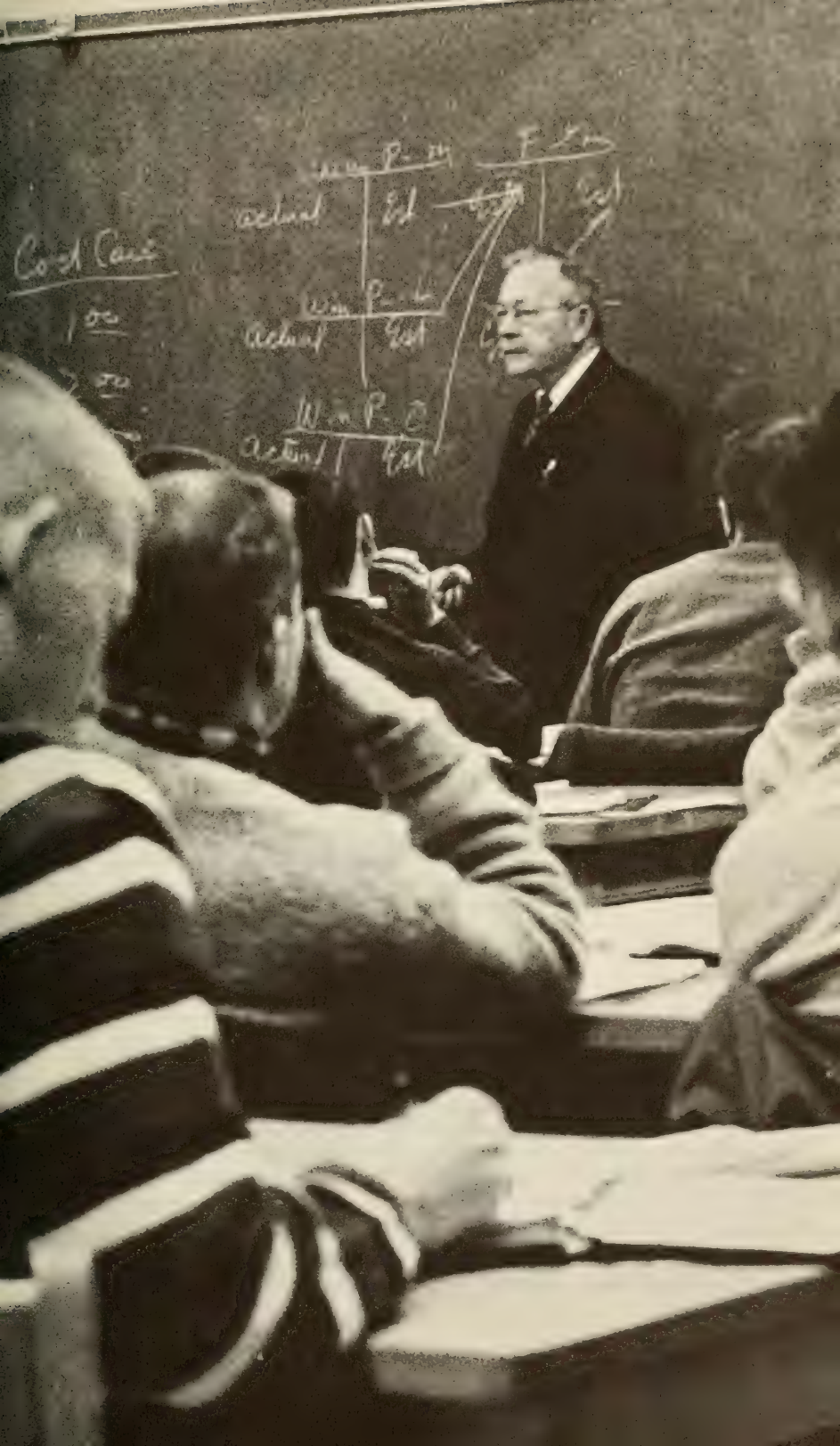
RECOMMENDED PREPARATION IN HIGH SCHOOL

Four units of English and one unit each of social sciences, natural sciences, and mathematics are required. For some major fields two units of mathematics are required. Additional units in mathematics, natural sciences, social sciences, and foreign languages are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various College of Education curricula. Fine arts, trade and vocational subjects are acceptable as electives.

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\* Not four-year programs—provide an additional area for certification only.





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W in P. 6		W in P. 8	
Actual	Est	Actual	Est



# COLLEGE OF ENGINEERING

## *Glenn L. Martin Institute of Technology*

FOUR-YEAR PROGRAMS LEAD TO THE BACHELOR OF SCIENCE DEGREE IN AERONAUTICAL, chemical, civil, electrical, and mechanical engineering, and in fire protection. Each program integrates these elements: (1) BASIC SCIENCE including mathematics, physics, chemistry; (2) ENGINEERING SCIENCE including mechanics of solids and fluids, engineering materials, thermodynamics, electricity and magnetism; (3) PROFESSIONAL STUDIES in aeronautical, chemical, civil, electrical or mechanical engineering; (4) LIBERAL ARTS AND SOCIAL STUDIES in "The American Civilization Program," and (5) CERTAIN OTHER REQUIRED SUBJECTS including military science and physical activities.

Each program lays a broad base for *continued learning* after college in professional practice, in business or industry, in public service, or in graduate study and research.

The following is representative of work performed by engineering graduates.

THE AERONAUTICAL ENGINEER deals with problems related to transporting people and things by air and through space. Aerodynamics, thermodynamics, and the mechanics of fluids and solids are among his engineering sciences. He may apply them in some phase of planning or producing airplanes, missiles, or rockets, or devising means to sustain and control their flight.

THE CHEMICAL ENGINEER applies chemistry to development and economic production of industrial chemicals, fuels, modern synthetics and certain alloys. He also applies mechanics, thermodynamics, reaction kinetics and aspects of nuclear science to unit operations and processes which are fundamental in the design and operation of the chemical industries.

THE CIVIL ENGINEER is primarily a planner, a designer, a builder, and a manager of public works and private enterprise. His professional service plays a major role in designing, supervising construction, or managing virtually every large building, bridge, dam, highway, railway, airport, water supply, waste disposal system, city plan, industrial plant, public works project, etc.

THE ELECTRICAL ENGINEER puts mathematics and the physical sciences to practical use in designing systems to generate, transmit, distribute, and use electrical energy; to transmit and receive "intelligence," as for example by telephone, radio, radar, television and computers; and to regulate and control mechanical and industrial processes by electronics and servomechanisms.

THE MECHANICAL ENGINEER figures ways to transmit power economically by heat or by mechanical systems. He applies the mechanics of fluids and solids, thermodynamics, and an understanding of the behavior of engineering materials under different conditions. As a professional engineer he devises processes for industrial production. As an industrial agent he serves as a supervisor, manager, or sales representative.

GRADUATES IN FIRE PROTECTION are concerned with scientific and technical problems of preventing loss of life and property by fire, explosion, and related hazards; and they serve industry, public agencies, and insurance companies professionally.

## RECOMMENDED PREPARATION IN HIGH SCHOOL

If you wish to become a *professional engineer* you should enroll in an *academic* program in high school. Subjects that are recommended and required for admission total sixteen units as follows:

SUBJECTS	RECOMMENDED	REQUIRED
<i>English</i>	<i>4 units</i>	<i>4 units</i>
<i>Mathematics (college preparatory)—including algebra (2), plane geometry (1), and more advanced mathematics</i>	<i>4</i>	<i>3½</i>
<i>History and social sciences</i>	<i>2</i>	<i>1</i>
<i>Physical sciences</i>	<i>2</i>	<i>1</i>
<i>Foreign language—German or French</i>	<i>2</i>	<i>0</i>
<i>Other academic subjects</i>	<i>2</i>	<i>6½</i>

## TYPICAL PROGRAM FOR THE FRESHMAN YEAR

All engineering students enroll in essentially the same subjects during their first year in college as follows:

SUBJECTS	SEMESTER	
	I	II
<i>Composition and American Literature</i>	<i>3</i>	<i>3</i>
<i>Elementary Mathematical Analysis</i>	<i>4</i>	<i>4</i>
<i>General Chemistry</i>	<i>4</i>	<i>4</i>
<i>Introductory Engineering Sciences; Mechanics</i>	<i>4</i>	<i>4</i>
<i>Basic Air Force R.O.T.C.</i>	<i>2</i>	<i>2</i>
<i>Physical Activities</i>	<i>1</i>	<i>1</i>

The numbers are "semester-credits." A student should plan to devote each week, on the average, three hours of *effective work* for each semester-credit on his schedule.

Each student in the College of Engineering will select his major-line department—aeronautical, chemical, civil, electrical, or mechanical engineering, or fire protection—before he begins his sophomore year's work. Thereafter he will pursue the approved program of his department which leads to the bachelor's degree.

Advanced engineering students who show promise of creativity and leadership in engineering, in the engineering sciences, and in teaching and research, are encouraged to continue in a program of graduate study leading to master's and doctor's degrees. There is an acute shortage of engineers with earned doctor's degrees. There are challenging opportunities for able men with such top-level preparation. The time to plan and to begin working for these top-level opportunities is while you are in high school. Your parents and your teachers can *help* provide the *opportunity*—after that *your education* is up to you. Plan to make the best of it!



## COLLEGE OF HOME ECONOMICS

THE PRIMARY FUNCTION OF HOME ECONOMICS IS TO INTEGRATE THE CONTRIBUTIONS OF THE PHYSICAL AND BIOLOGICAL SCIENCES, THE SOCIAL SCIENCES, PSYCHOLOGY, PHILOSOPHY, AND ART IN THE TREATMENT OF ALL PHASES OF HOME AND FAMILY LIFE, TO THE END THAT THEY ARE USED BY FAMILIES IN ALL PARTS OF SOCIETY AND BY THE AGENCIES SERVING FAMILIES.

The educational program of the College of Home Economics is planned to help students function effectively as individuals, as family members, and responsible citizens; to prepare men and women for positions for which home economics is a major or minor preparation. Entering freshmen may enroll without specifying a major area; however, a choice must be made by the beginning of the fourth semester.

Graduates of the College are prepared to enter one of three broad areas of employment: Educational-community-family life, technical, and commercial consumer service. The various programs of study have certain common courses with possible options and electives to meet needs of students. The major curricula include: General and family life; home economics education and extension; applied or practical art; food, nutrition, institution administration; and textiles and/or clothing.

FOUNDATION AND FAMILY LIFE. The program is designed for students who wish a background in areas of home economics related to personal, home and community living. Preparation for the career of homemaking is a recognized aspect of this curriculum. Graduates are employed with business firms as consultants with consumers of goods and services.

EDUCATION AND EXTENSION. This program is designed for students who are preparing to teach home and family living or to become home economics extension agents. Both programs include study in all phases of home economics and the allied sciences along with specified professional training.

FOOD, NUTRITION, INSTITUTION ADMINISTRATION. Students learn the scientific principles underlying food selection, purchase, preparation, and service for home and institution use. Food and nutrition are applied sciences; therefore, courses in chemistry, physiology, microbiology, psychology, and economics are essential to their understanding. Graduates in this area are employed in consumer education departments of business firms, communication areas, and state or community programs. Opportunities in food service include hospitals, schools and colleges, and commercial institutions.

HOUSING AND APPLIED DESIGN. This program permits a choice of three areas: art in advertising, housing, interior design, and costume design. Graduates have basic preparation in the areas of designing, promotion and merchandising of wearing apparel and home furnishings.

TEXTILES AND CLOTHING; TEXTILES. This curriculum promotes understanding of textiles, fashion, and clothing design and construction in relation to technological and social developments influencing consumer choices. Graduates have positions in homemaking and/or merchandising, designing, fashion promotion, textile testing, and research.



### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

#### FIRST SEMESTER

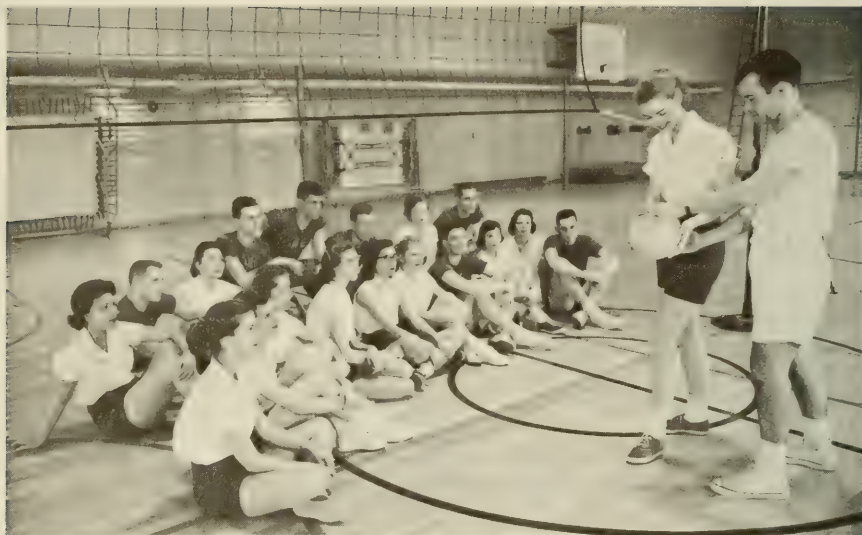
*English Composition and Literature*  
*American Government*  
*Speech*  
*Family Life*  
*Design Fundamentals*  
*Science & Theory of Health*  
*R.O.T.C. (men)*  
*Physical Activities*  
*General Chemistry or Laboratory Science*

#### SECOND SEMESTER

*English Composition and Literature*  
*Sociology of American Life*  
*Consumer Textiles or Food and People*  
*R.O.T.C. (men)*  
*Physical Activities*  
*General Chemistry, Laboratory Science, or Mathematics elective*

### RECOMMENDED PREPARATION IN HIGH SCHOOL

Four units of English and one unit each of social sciences, natural sciences, and mathematics are required. Additional units in the above areas and in home and family living are desirable in certain curricula.



## COLLEGE OF PHYSICAL EDUCATION, RECREATION, AND HEALTH

### FOUR YEAR PROGRAMS LEADING TO THE BACHELOR OF SCIENCE DEGREE:

**PHYSICAL EDUCATION.** The curriculum provides an adequate background in general education and scientific areas closely related to this field. Development of skills in a wide range of motor activities is emphasized. Many vocational opportunities are available in public and private schools, organized camping, youth and adult organizations which offer a program of physical activity.

**DANCE.** With the increasing recognition of the importance and scope of dance in educational programs, the need for teachers adequately trained in dance far exceeds the number available. The professional curriculum in dance is constructed to meet the steadily rising demand for personnel qualified to teach dance in college, secondary, elementary schools, in camps, recreational agencies and in preparation for dance therapy.

**RECREATION.** Through area courses in sports, speech and drama, music, arts and crafts, nature lore, and those courses in the major field itself, program planning, organization and administration, leadership, techniques, etc. students are qualified to accept leadership positions in hospitals, industry, churches, public departments, with the armed forces or the many public and private agencies.

**HEALTH EDUCATION.** A healthy nation is not primarily the responsibility of physicians and druggists but of the people themselves. This means that people need to know how to live healthfully and to utilize available health facilities—that is they all need health education. Persons qualified to teach health are needed in schools, colleges, community health agencies and hospitals. Students interested in qualifying for supervisory or college-level positions are encouraged to plan on doing graduate work either in school health or public health education.



**PHYSICAL THERAPY.** Physical therapy is one of the professions which has come into prominence as the scope of medical care has expanded. The modern concept of the rehabilitation of acute and chronically disabled persons has created an increasing demand for physical therapy service. It offers careers for both men and women who are interested in becoming members of a service which assists the ill and handicapped achieve maximum restoration of physical function.

The University of Maryland offers a course of physical therapy leading to the Bachelor of Science degree and to a certificate of proficiency in physical therapy.

#### RECOMMENDED PREPARATION IN HIGH SCHOOL

In addition to the four units of English and one unit each of Social and Natural Sciences, it is especially desirable for students to have at least one unit each in Biological and Physical Science and in Algebra and Plane Geometry. Any experience in music, drama, camping, playground and recreational activities, and group leadership also will be helpful. In addition, participation in school programs of health and safety education and in physical education and athletics are desirable.

#### SPECIAL FACILITIES

The facilities on the campus include five gymnasias, two swimming pools, a physical fitness research laboratory, tennis courts, sports fields, golf driving range and golf course, dance studio, and an excellent library. The Washington YMCA camp, Camp Letts, also is used for certain activities.

Students also are encouraged to use the excellent facilities of the Library of Congress, Army Medical Library and Museum, and the National Institutes of Health.

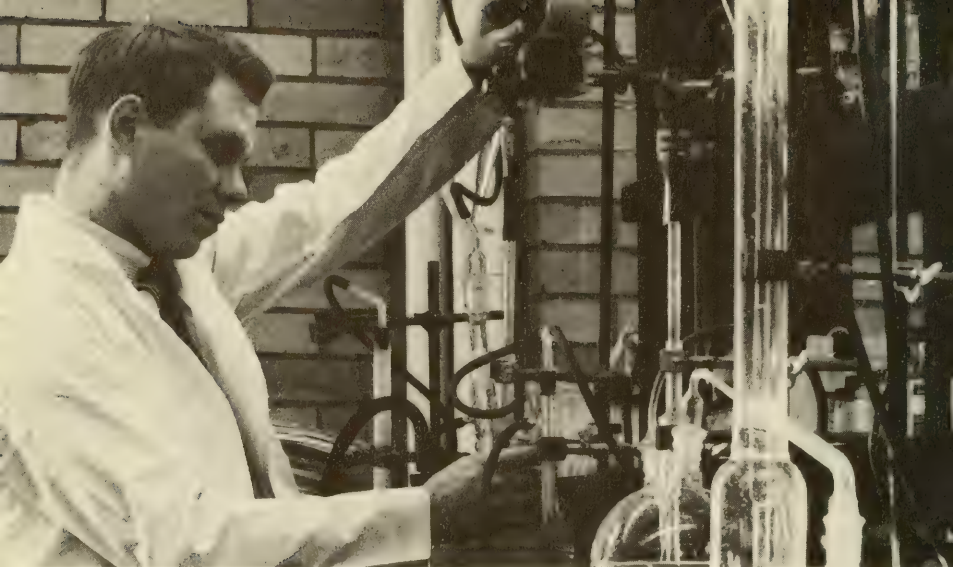
#### EXPERIENCES

In addition to classroom and laboratory work, opportunities for teaching on and off campus and participating in field experience are provided. Membership in professional groups such as Phi Alpha Epsilon, Aqualiners, Dance Club and Gymkana troupe is encouraged as well as participation in other campus activities. In each of the fields of specialization in this College unique opportunities in dance, sports, recreation, musical and dramatics organizations exist in the environs of Washington and Baltimore.

#### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

**FIRST SEMESTER.** English; Government and Politics; Speech; Introduction to Physical Education, Recreation and Health; Rhythmic Analysis and Movement; Sport Skills and Gymnastics; Basic Body Controls (Women); R.O.T.C. (Men)

**SECOND SEMESTER.** English; Zoology; Sociology, Philosophy or Economics; Modern Dance Techniques (Women); Skills in Square and Social Dance; Sport Skills and Gymnastics; R.O.T.C. (Men)



## THE SCHOOL OF PHARMACY

THE PROFESSION OF PHARMACY MERITS AND INVITES THE SERIOUS CONSIDERATION of meticulous and careful individuals who wish to pursue a career of dedicated service.

The educational program of the School of Pharmacy is designed to train young women and men for the efficient, ethical practice of pharmacy; to instruct students in cultural and scientific subjects as well as in administrative and managerial methods for the orderly development of members of a profession and citizens in a democracy; to guide students into productive scholarship and research for the increase of knowledge and techniques in the healing arts of pharmacy.

The five-year curriculum at the University of Maryland leading to the degree of Bachelor of Science in Pharmacy consists of two years of pre-professional training available at College Park and three years of the pharmacy program offered in Baltimore. Students from other accredited universities or colleges offering appropriate courses may be admitted directly to the professional program at Baltimore, if admissions requirements are met.

Strong encouragement is given to superior students to continue their education beyond the bachelor degree so that they may prepare for teaching and/or research positions.

Scholarships for students enrolled in the pre-professional program at College Park are described in the section "Endowed Scholarships and Grants."

The School of Pharmacy, a member of the American Association of Colleges of Pharmacy, is accredited by the American Council on Pharmaceutical Education.

The prime opportunities available to pharmacists are in the fields of community and hospital pharmacy.

The practice of community pharmacy requires the skills and knowledge of the professional man and the operational activities of the business man in preparing and servicing the medicaments and other health supplies of the community.

The hospital pharmacist utilizes his training in procuring, preparing, distributing and controlling the drug supplies and adjunct materials of his institution.

Pharmaceutical manufacturers employ pharmacists as analysts of raw materials and finished products, as supervisors in the manufacturing plants and as medical sales representatives.

Opportunities are also available to pharmacy graduates in various local and federal agencies.

An academic program in high school is prerequisite to enrollment in the Pharmacy School. Academic subjects which are recommended and required for admission to the Pre-Professional Program at College Park are:

<i>Subject</i>	<i>Recommended</i>	<i>Required</i>
English .....	4 units	4 units
College Preparatory Mathematics—including algebra (1), plane geometry (1) and additional units in advanced algebra, solid geometry, trigonometry, or advanced mathematics .....	4	2
Physical Sciences (Chemistry and Physics) .....	2	1
History and Social Sciences .....	2	1
Biological Sciences .....	1	0
Foreign Language—German or French .....	2	0
Unspecified academic subjects .....	1	8
<b>Total .....</b>	<b>16</b>	<b>16</b>

FRESHMAN PROGRAM AT COLLEGE PARK

All students enroll for the following pre-professional courses during their first year in college:

<i>Courses</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
General Chemistry .....	4	4
Composition and American Literature .....	3	3
Introduction to Mathematics .....	3	3
or		
Introductory and Elementary Mathematical Analysis .....	3	4
General Zoology .....	4	—
General Botany .....	—	4
Physical Activities .....	1	1
Basic Air Force R.O.T.C. (Men) .....	1	2
Science & Theory of Health .....	2	—
<b>Total .....</b>	<b>17 or 18</b>	<b>15, 16, 17 or 18</b>



# THE SCHOOL OF NURSING

THE SCHOOL OF NURSING OFFERS BOTH GENERAL AND FUNDAMENTAL EDUCATION for students who wish to prepare for professional nursing: (A) A generic four-year college program planned for students who have no previous experience or knowledge in nursing; and (B) A program for registered nurses who have completed a three-year nursing program and who desire to bring up to full collegiate level their basic nursing preparation. Both programs lead to the degree, Bachelor of Science in Nursing.

Beginning students in nursing spend the first two academic years on the College Park Campus. Students from other accredited colleges may be admitted directly to the Baltimore Campus providing they meet admission requirements. Students in the registered graduate nurse program attend classes selected by the advisor on either campus.

In association with the Graduate School of the University, the School of Nursing prepares professional nurses who hold Bachelor of Science Degrees in Nursing with a "B" or better average as administrators in nursing and as instructors, supervisors, and clinical specialists in medical-surgical nursing, obstetrical nursing, pediatric nursing, general psychiatric nursing, public health nursing and nursing of children with psychiatric disorders. Masters students take most of their work on the Baltimore Campus.

All programs presently being offered by the School of Nursing are accredited by the National League for Nursing.

## SPECIAL FACILITIES

The facilities for instruction used by the School of Nursing include the various colleges and professional schools of the University and the University Hospital. Other facilities include the Baltimore City Health Department, Maryland State Health Department, the State Department of Mental Hygiene, Montebello State Hospital, Baltimore City Hospitals, and The Children's Guild. Other accredited hospitals are utilized for resident training in Administration in Nursing and Practice Teaching.

## TYPICAL PROGRAM FOR THE FRESHMAN YEAR

### FIRST SEMESTER

*English*  
*Sociology*  
*Zoology*  
*Chemistry*  
*Speech*  
*Physical Activities*

### SECOND SEMESTER

*English*  
*Government and Politics*  
*Chemistry*  
*Speech*  
*Nursing*  
*Physical Activities*  
*Algebra*

## RECOMMENDED PREPARATION IN HIGH SCHOOL

*English* ..... 4 years  
*Mathematics* ..... 2 years  
*History and Social Sciences* ..... 2 years  
*Foreign Language* ..... 2 years or more  
*Science* ..... 1 year  
(Biology, Chemistry or Physics)

# UNIVERSITY COLLEGE

IN CONTRAST TO THE USUAL PRACTICE OF BRINGING THE STUDENT TO THE University, it is the function of University College to take the University to the student. Thus, the College provides general education opportunities for adults, both on and off the campus, who study on a part-time basis during the evening hours.

The University College Program rests on the philosophy that continuing learning is essential for survival in today's complex world and that the University has an obligation to meet the educational needs of the adult citizens of the State as well as to its college-age youth.

Specifically, the College has a three-fold purpose: (1) To extend the facilities of the University by offering college credit evening courses for adults on campus and off campus throughout the State, the District of Columbia and various overseas centers; (2) To offer the Bachelor of Arts degree in General Studies for qualified adult students; and (3) To arrange special programs to meet the specific educational needs of adult groups. The recently completed Center of Adult Education, embodying specially designed facilities, provides a climate for adult learning in a residential setting.

The overseas programs are offered in cooperation with the U. S. Armed Forces to military and civilian personnel and their dependents stationed in twenty-five foreign countries on four continents. The College does not offer correspondence courses.

Undergraduate courses are offered in the arts and sciences, business administration and education. Graduate courses in government and politics are offered at the Pentagon Center, and graduate courses in education are offered in the evening on the Baltimore Campus.

The General Studies curriculum provides opportunities for programs in the humanities, social sciences and business, with concentrations of study in such fields as commerce, English, government and politics, history, philosophy, psychology, and sociology.

Students who have never attended a college or university must have either an acceptable high school diploma or the high school equivalent. Students who have attended another college or university must be in good academic standing in order to enroll in University College. For further information about admission requirements, see the University College catalog or a College advisor. Graduate courses are open only to students who are fully matriculated in the Graduate School prior to the date of registration.

Continuing educational programs are offered each year at the following centers in the State of Maryland and the District of Columbia:

Aberdeen Proving Ground	Fort Meade	Pentagon
Andrews Air Force Base	Fort Ritchie	Rockville Missile Site
Baltimore Campus	Maryland Penitentiary	Tolchester Missile Site
Bolling Air Force Base	National Bureau of Standards	Walter Reed Army
College Park Campus	Naval Ordnance Laboratory	Medical Center
D.C. Recreation Dept.	Naval Research Laboratory	Westinghouse Electronics Plant
Edgewood Arsenal	Patuxent River Naval Air Station	

In addition, during the 1963-64 school year, courses offered primarily for teachers in service were given in the following counties throughout the State:

Allegany	Charles	Montgomery	Talbot
Anne Arundel	Dorchester	Prince George's	Washington
Baltimore	Frederick	Queen Anne's	Wicomico
Calvert	Harford	Somerset	Worcester
Caroline	Kent	St. Mary's	

For further information, see the University College catalog which may be obtained by writing the Dean, University College, University of Maryland, College Park, Maryland.

# APPENDIX A

## FEES AND EXPENSES

### GENERAL

All checks or money orders should be made payable to the University of Maryland for the exact amount of the charges. In cases where students have been awarded General Assembly Grants or University Grants, the amount of such grants will be deducted from the bill.

All fees are due and payable at the time of registration, and students should come prepared to pay the full amount of the charges. No student will be admitted to classes until such payment has been made.

The University reserves the right to make such changes in fees and other charges as may be found necessary, although every effort will be made to keep the cost to the student as low as possible.

No degree will be conferred, nor any diploma, certificate, or transcript of record issued to a student who has not made satisfactory settlement of his account.

### EXPLANATION OF FEES

The application fee for the undergraduate colleges and the summer session partially defrays the cost of processing applications for admission to these divisions of the University. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. Applicants who have enrolled with the University of Maryland in its Evening Division at College Park or Baltimore, or at one of its off-campus centers are not required to pay the fee since they have already paid a matriculation fee.

The Fixed Charges Fee is not a charge for tuition. It is a charge to help defray the cost of operating the University's physical plant, to pay administrative and clerical expenses and other costs which ordinarily would not be included as a cost of teaching personnel and teaching supplies.

The Instructional Materials Fee represents the average of laboratory fees assigned to full-time undergraduate students. Graduate students, part-time undergraduate students and students enrolled in the Summer School will be billed for individual laboratory fees, and not the Instructional Materials Fee. Full-time undergraduate students subject to the fees set forth below will be billed the appropriate fee and also will be billed the Instructional Materials Fee: Math. 1, \$45.; Applied Music, \$40.; and P. E. 8 Riding Class, \$26.

The Athletic Fee is charged for the support of the Department of Intercollegiate Athletics. All students are eligible and all students are encouraged to participate in all of the activities of this department and to attend all contests in which they do not participate.

The Student Activities Fee is a mandatory fee included at the request of the Student Government Association. It covers subscription to the *Diamondback*, student newspaper; the *Old Line*, literary magazine; the *Terrapin*, yearbook; class dues; and includes financial support for the musical and dramatic clubs and a cultural entertainment series.

The Special Fee is used to pay interest on and amortize the cost of construction of the Student Union Building, the Activities Building, and the Swimming Pool.

The Recreational Facilities Fee is paid into a fund which will be used to expand the recreational facilities on the College Park campus, especially the Student Union Building.

The Infirmary Fee is charged for the support of the Student Health Service, but does not include expensive drugs or special diagnostic procedures. Expensive drugs will be charged at cost and special diagnostic procedures, such as X-ray, electro-cardiographs, basal metabolic rates, etc., will be charged at the lowest cost prevailing in the vicinity.

The Advisory and Testing Fee is charged to cover partially the cost of the University Counseling Center and the Freshman Testing Program.

Full-time undergraduate students who register for the second semester but who were not full-time undergraduate students in the first semester are required to pay the following additional fees: Athletic Fee, \$10.00; Student Activities, \$8.00; Special Fee, \$7.50; Recreational Facilities Fee, \$12.50.



## DEFINITION OF RESIDENCE AND NON-RESIDENCE

Effective immediately is the following definition of "resident" and "non-resident":

Students who are minors are considered to be resident students if at the time of their registration their parents have been domiciled in the State of Maryland for at least six months.

The status of the residence of a student is determined at the time of his first registration in the University and may not thereafter be changed by him unless, in the case of a minor, his parents move to and become legal residents of Maryland by maintaining such residence for at least six months. However, the right of the minor student to change from a non-resident status to resident status must be established by him prior to the registration period set for any semester.

Adult students are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least six months provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. *Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the six months period referred to above except in those cases in which the adult was domiciled in Maryland for at least six months prior to his entrance into the armed service and was not enrolled in any school during that period.*

The word "domicile" as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

## FEES FOR RESIDENTS AND NON-RESIDENTS

### FEES FOR UNDERGRADUATE STUDENTS:

#### MARYLAND RESIDENTS

	<i>First Semester</i>	<i>Second Semester</i>	<i>Total</i>
Fixed Charges.....	\$130.00	\$120.00	\$250.00
Instructional Materials.....	12.00	12.00	24.00
Athletic Fee.....	20.00	....	20.00
Student Activities Fee.....	12.00	....	12.00
Special Fee.....	15.00	....	15.00
Recreational Facilities Fee.....	25.00	....	25.00
	<u>\$214.00</u>	<u>\$132.00</u>	<u>\$346.00</u>

#### RESIDENTS OF THE DISTRICT OF COLUMBIA, OTHER STATES AND COUNTRIES

	<i>Semester</i>	<i>Semester</i>	<i>Total</i>
Tuition Fee for Non-Resident Students.....	\$200.00	\$200.00	\$400.00
Total for Non-Resident Students.....	<u>\$414.00</u>	<u>\$332.00</u>	<u>\$746.00</u>

#### BOARD AND LODGING

Board.....	\$210.00	\$210.00	\$420.00
Dormitory Room			
Maryland Residents.....	\$145-160	\$145-160	\$290-320*
Other States and Countries.....	\$170-185	170-185	340-370**

The above fees do not apply to the temporary Veteran's Housing Units. The rates for these family units are as follows: two-room apartment \$40 per month; three-room apartment \$43 per month.

## SPECIAL FEES

### UNDERGRADUATE APPLICATIONS

The deadline for the receipt of applications for the Spring Semester is January 1.

All applications for full-time undergraduate admission for the Fall Semester at the College Park campus must be received by the University on or before July 15. Any student registering for nine (9) or more semester hours of work is considered a full-time student.

Under unusual circumstances, applications will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$25.00 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10.00 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission must be received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

\* Effective September, 1965 annual fee for men will be \$320.

\*\* Effective September, 1965 annual fee for both men and women will be \$420.

Application Fee (see "Explanation of Fees," page 50).....	\$ 10.00
Late Application Fee.....	25.00
Matriculation Fee.....	10.00
Graduation Fee for Bachelor's degree*.....	10.00
Room Deposit Fee payable upon application for dormitory room**.....	25.00
(To be deducted from the first semester room charges at registration.)	
Practice Teaching Fee.....	24.00
Special Fee for students requiring additional preparation in Mathematics, per semester.....	45.00
(Required of students whose curriculum calls for Math. 10 or 18 and who fail in qualifying examination for these courses.)	
Special Guidance Fee per semester (for students who are required or who wish to take advantage of the effective study course, and/or the tutoring service offered by the Office of Intermediate Registration).....	15.00
Fees for Auditors are exactly the same as fees charged to students registered for credit, with the exception that the non-resident fee will not be charged in the case of students not registering for credit in any courses.	
Special students are assessed fees in accordance with the schedule for the comparable undergraduate or graduate classification.	

## LABORATORY AND OTHER FEES

Paid by all students except full-time undergraduate students who are assessed the Instructional Materials Fee.

### LABORATORY FEES PER SEMESTER COURSE:

Agricultural Engineering.....	\$ 3.00	Horticulture.....	5.00
Botany.....	5.00, 6.00 and 10.00	Industrial Education.....	5.00 and \$7.50
Business Administration.....	7.50 and 10.00	Mechanical Engineering.....	3.00 and 6.00
Journalism.....	3.00 and 6.00	Microbiology.....	15.00 and 20.00
Statistics.....	6.00	Physical Activities Courses.....	6.00
Office Techniques and Management.....	7.50 and 10.00	Physics—	
Chemical Engineering.....	8.00 and 10.00	Lecture Demonstration.....	2.00 and 3.00
Chemistry.....	12.00 and 20.00	Introductory.....	3.00
Education (depending on Laboratory).....	1.00, 2.00, 3.00, 5.00	All Other.....	10.00
Dairy.....	3.00	Psychology.....	4.00
Electrical Engineering.....	4.00 and 5.00	Speech (depending on Laboratory).....	1.00, 2.00, 3.00, 7.50 and 10.00
Entomology.....	3.00	Radio and Stage Craft.....	2.00
Home Economics (depending on Course).....	3.00, 10.00	Zoology.....	8.00

### MISCELLANEOUS FEES AND CHARGES

Part-time Undergraduate Students:	
Fee per credit hour.....	15.00
Auxiliary Facilities fee per semester payable at each registration.....	3.00
(The term "part-time students" is interpreted to mean undergraduate students taking 8 semester credit hours or less. Students carrying 9 semester hours are considered to be full time and must pay the regular full-time fees.)	
Late Registration Fee.....	20.00
(All students are expected to complete their registration, including the filing of class cards and payment of bills, on the regular registration days. Those who do not complete their registration during the prescribed days must pay this fee.)	
Fee for change in registration.....	5.00
Fee for failure to report for medical examination appointment.....	2.00
Special Examination Fee—to establish college credit—per semester hour.....	5.00
Transcript of Record Fee (one transcript furnished without charge).....	1.00
Property Damage Charge: Students will be charged for damage to property or equipment. Where responsibility for the damage can be fixed, the individual student will be billed for it; where responsibility cannot be fixed, the cost of repairing the damage or replacing equipment will be prorated.	

\* An additional late application fee of \$10.00 will be assessed against students who fail to apply for graduation within the first eight weeks of a regular semester or the first three weeks of a summer session. Students who apply after the end of the twelfth week of a regular academic semester and those who apply after the end of the fourth week of a summer session will be required to wait for the next academic semester in order to obtain a diploma.

\*\* Effective with the acceptance of reservations for the Fall Semester 1965 the Room Deposit Fee will be \$50.00.





### Library Charges:

Fine for failure to return book from General Library before expiration of loan period.....	per day \$ .05
Fine for failure to return book from Reserve Shelf before expiration of loan period:	
First hour overdue.....	.25
Each additional hour overdue.....	.05

In case of loss or mutilation of a book, satisfactory restitution must be made.

In the event it becomes necessary to transfer uncollected charges to the Cashier's office, an additional charge of \$1.00 is made.

### TEXTBOOKS AND SUPPLIES

Textbooks and classroom supplies: These costs vary with the course pursued, but will average per semester.....	50.00
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### FEES FOR GRADUATE STUDENTS

Fee per semester hour.....	18.00
Matriculation Fee, payable only once, at time of first registration.....	10.00
Graduation Fee for Master's Degree*.....	10.00
Graduation Fee for Doctor's Degree*.....	50.00
Infirmary Fee.....	5.00
Foreign Language examination.....	6.00
Testing Fee (Education Majors).....	5.00

NOTES: Fees in the Graduate School are the same for all students, whether or not they are residents of the State of Maryland.

All fees, except Graduation Fee, are payable at the time of registration for each semester. Graduation Fee must be paid prior to graduation.

No provision for housing students is made by the University.

Graduate students entering in February pay an Infirmary fee of \$2.50.

### FEES FOR OFF-CAMPUS COURSES

Matriculation Fee (payable once, at time of first registration by all students—full time and part time, candidates for degrees, and non-candidates):	
For Undergraduates.....	\$ 10.00
For Graduates.....	10.00
Fee for all students—limit 6 hours. For exceptional adult students taking off-campus courses the limit may be increased to 9 hours. Charge per credit hour.....	15.00
Laboratory Fees: A laboratory fee, to cover cost of materials used, is charged in laboratory courses. Fees vary with the course and can be ascertained in any case by inquiry to the Dean of University College.	

### WITHDRAWAL AND REFUND OF FEES

Any student compelled to leave the University at any time during the academic year should file an application for withdrawal, bearing the proper signatures, in the Office of the Registrar. If this is not done, the student will not be entitled, as a matter of course, to a certificate of honorable dismissal, and will forfeit his right to any refund to which he would otherwise be entitled. The date used in computing refunds is the date the application for withdrawal is filed in the Office of the Registrar.

In the case of a minor, withdrawal will be permitted only with the written consent of the student's parent or guardian.

Students withdrawing from the University will be credited for all academic and room fees charged to them in accordance with the following schedule:

<i>Period from Date Instruction Begins</i>	<i>Refundable</i>
Two weeks or less.....	80%
Between two and three weeks.....	60%
Between three and four weeks.....	40%
Between four and five weeks.....	20%
Over five weeks.....	0

The Application Fee and the Matriculation Fee are not returnable in any instance.

\* An additional late application fee of \$10.00 will be assessed against students who fail to apply for graduation within the first eight weeks of a regular semester or the first three weeks of a summer session. Students who apply after the end of the twelfth week of a regular academic semester and those who apply after the end of the fourth week of a summer session will be required to wait for the next academic semester in order to obtain a diploma.

Board is refunded only in the event the student withdraws from the University or the residence halls. Refunds of board are made on a pro-rata, weekly basis. ID Cards with dining hall validation issued to boarding students must be surrendered at the Auditor's Office in the Administration Building on the day of withdrawal, before any refund will be processed.

In computing refunds to students who have received the benefit of scholarships and loans from University Funds, the computation will be made in such a way as to return the maximum amount to the scholarship and loan accounts without loss to the University.

No refund of the Athletic, Student Activity, Special, Recreational Facilities, Infirmary, and Advisory and Testing Fees is made to students who withdraw at the close of the first semester.

No refunds of Fixed Charges, Lodging, Tuition, Laboratory Fees, Instructional Materials Fee, etc., are allowed when courses are dropped, unless the student withdraws from the University.

When regularly enrolled part-time students in off-campus instruction officially drop a course or courses and continue with one or more courses, they may receive a refund of 80% for the dropped courses if they are officially dropped prior to the third meeting of the class or classes.

## TRANSCRIPTS OF RECORDS

Students and alumni may secure transcripts of their scholastic records from the Office of the Registrar. No charge is made for the first copy; for additional copies, there is a charge of \$1.00 for each transcript. Checks should be made payable to the University of Maryland. Transcripts of records should be requested at least one week in advance of the date when the records are actually needed. No transcript of a student's record will be furnished any student or alumnus whose financial obligations to the University have not been satisfied.

## APPENDIX B

### HONORS, AWARDS, SCHOLARSHIPS AND GRANTS-IN-AID

#### HONORS, AWARDS

**SCHOLARSHIP HONORS**—Final honors for excellence in scholarship are awarded to one-fifth of the graduating class in each College. "HIGH HONORS" are awarded to the upper half of this group; "HONORS" to the lower half. To be eligible for honors, a student must complete at least two years of resident work (60 semester hours) at the University with an average of B (3.0) or higher.

**MILTON ABRAMOWITZ MEMORIAL PRIZE IN MATHEMATICS**—A prize is awarded annually to a junior or senior student majoring in mathematics who has demonstrated superior competence and promise for future development in the field of mathematics and its applications.

**ALPHA CHI SIGMA AWARD**—The Alpha Rho Chapter of the Alpha Chi Sigma Honorary Fraternity offers annually a year's membership in the American Chemical Society to the senior majoring in Chemistry or Chemical Engineering whose average has been above 3.0 for three and one-half years.

**ALPHA LAMBDA DELTA AWARD**—Presented to the senior member of the group who has maintained the highest average for three and a half years. She must have been in attendance in the institution for the entire time.

**ALPHA LAMBDA DELTA SENIOR CERTIFICATE AWARD**—Senior members of Alpha Lambda Delta, honorary scholastic society for women, who have maintained an average of 3.5, receive this certificate.

**ALPHA ZETA MEDAL**—The Professional Agricultural Fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest average record in academic work.

**AMERICAN INSTITUTE OF CHEMICAL ENGINEERS AWARD**—A certificate, pin, and magazine subscription are awarded to the junior member of the Student Chapter who attained the highest overall scholastic average during his freshman and sophomore years.

**AMERICAN INSTITUTE OF CHEMISTS AWARD**—Presented for outstanding scholarship in chemistry and for high character.

**AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS AWARD**—The Washington Section of the American Institute of Electrical Engineers defrays the expenses of a year's membership as an associate in the Institute for the senior doing the most to promote Student Branch activities.

**AMERICAN SOCIETY OF CIVIL ENGINEERS AWARD**—The Maryland Section of the American Society of Civil Engineers awards annually the first year's dues of an associate membership in the Society to a senior member of the Student Chapter on recommendation of the faculty of the Department of Civil Engineering.

**AMERICAN SOCIETY OF MECHANICAL ENGINEERS AWARD**—Presented to the senior member who contributed most to the local chapter.

**AMERICAN SOCIETY FOR METALS AWARD**—Presented for outstanding attainments in metallurgy, Department of Chemical Engineering.

**APPLEMAN-NORTON AWARD IN BOTANY**—The Department of Botany offers a scholarship award of \$100 in honor of Emeritus Professors C. O. Appleman and J. B. S. Norton to a senior major in Botany who is considered worthy on the basis of demonstrated ability and excellence in scholarship. The scholarship is awarded by the Committee on Scholarships upon the recommendation of a committee of the faculty of the Department of Botany.

**ASSOCIATED WOMEN STUDENTS AWARDS**—Presented for outstanding achievement, character, and service to the University.



**DAVID ARTHUR BERMAN MEMORIAL AWARD**—This award is offered by the family of David Arthur Berman to the highest ranking junior in the Department of Chemical Engineering who is also a member of Tau Beta Pi.

**DINAH BERMAN MEMORIAL MEDAL**—The Dinah Berman Memorial Medal is awarded annually to the sophomore who has attained the highest scholastic average of his class in the College of Engineering. The medal is given by Mr. Benjamin Berman.

**B'NAI B'RITH AWARD**—The B'nai B'rith Women of Prince George's County present a Book Award for excellence in Hebrew Studies.

**CITIZENSHIP PRIZE FOR MEN**—President Emeritus H. C. Byrd, of the Class of 1908, annually presents this award to the member of the senior class who, during his collegiate career, has most nearly typified the model citizen and who has done most for the general advancement of the interests of the University.

**CITIZENSHIP PRIZE FOR WOMEN**—This prize is presented annually as a memorial to Sally Sterling Byrd, by her children, to that member of the senior class who best exemplifies the enduring qualities of the pioneer woman. These qualities typify self dependence, courtesy, aggressiveness, modesty, capacity to achieve objectives, willingness to sacrifice for others, strength of character, and those other qualities that enabled the pioneer woman to play such a fundamental part in the building of the nation.

**CHI EPSILON**—A year's subscription to *Civil Engineering* is awarded annually by the Society to the outstanding civil engineering sophomore.

**ERNIE COBLENTZ MEMORIAL TROPHY**—Offered to the most outstanding freshman for work done on student publications.

**THE CARROLL E. COX GRADUATE SCHOLARSHIP AWARD** in Botany to the outstanding graduate student in the Department of Botany during the last year.

**BERNARD L. CROZIER AWARD**—The Maryland Association of Engineers awards a cash prize of twenty-five dollars annually to the senior in the College of Engineering who, in the opinion of the faculty, has made the greatest improvement in scholarship during his stay at the University.

**VIRGINIA DARE AWARD**—The Virginia Dare Extract Company awards annually a plaque and \$25.00 to the outstanding student in ice cream manufacturing with an overall good standing in dairy.

**THE DANFORTH FOUNDATION AND THE RALSTON PURINA AWARDS**—The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer awards to outstanding men students in the College of Agriculture, one for a student who has successfully completed his junior year, the other for a student who has successfully completed his freshman year. The purpose of these awards is to bring together outstanding young men for leadership training.

The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer awards to outstanding Home Economics women students, one to a junior and one to a freshman. The purpose of these is to bring together outstanding young women for leadership training.

**DELTA DELTA DELTA MEDAL**—This sorority awards a medal annually to the woman who attains the highest average in academic work during the sophomore year.

**DELTA GAMMA SCHOLARSHIP AWARD**—This award is offered to the woman member of the graduating class who has maintained the highest average during three and one-half years at the University.

**DELTA SIGMA PI SCHOLARSHIP KEY**—This award is offered to a member of the graduating class who has maintained the highest scholastic average for the entire four-year course in the College of Business and Public Administration.

**NATHAN L. DRAKE AWARD**—Presented by the Alpha Rho Chapter of Alpha Chi Sigma to the most promising student who is majoring in chemistry and has completed the sophomore year.

**EDUCATION ALUMNI AWARD**—Presented to the outstanding senior man and senior woman in the College of Education.

**GODDARD MEDAL**—The James Douglass Goddard Memorial Medal is awarded annually to the resident of Prince Georges County, born therein, who makes the highest average in his studies and who at the same time embodies the most manly attributes. The medal is given by Mrs. Anne G. Goddard James of Washington, D. C.

**GRANGE AWARD**—The Maryland State Grange makes an annual award to the senior who has excelled in leadership and scholastic attainment and has contributed meritorious service to the College of Agriculture.

**MAHLON N. HAINES AWARD**—An award of one hundred dollars is presented each year to the students in the Department of Fine Arts for outstanding work in the painting classes.

**CHARLES B. HALE DRAMATIC AWARDS**—The University Theatre recognizes annually the man and woman members of the senior class who have done most for the advancement of dramatics at the University.

**HAMILTON AWARD**—This award is offered by the Hamilton Watch Company to the graduating senior in the College of Engineering who has most successfully combined proficiency in his major field of study with achievements—either academic, extra-curricular, or both—in the social sciences or humanities.

**HOME ECONOMICS ALUMNI AWARD**—Presented to the student outstanding in application of home economics in her present living and who shows promise of carrying these into her future home and community.

**WILLIAM H. HOTTEL AWARD**—Presented to the most outstanding senior for work done on student publications during his college career.

**INSTITUTE OF AERONAUTICAL SCIENCES AWARDS**—Free memberships in the Institute for one year and cash prizes for the best paper presented at a Student Branch meeting and for the graduating aeronautical senior with the highest academic standing.

**JOE ELBERT JAMES MEMORIAL AWARD**—Gold watch annually awarded to the graduating senior in horticulture on basis of scholarship and promise of future achievement.

**MACHINERY'S AWARD**—For excellence in machine design, a copy of *Machinery's Handbook* and a copy of the Handbook Guide is awarded annually to a mechanical engineering senior.

**MARYLAND PRESS ASSOCIATION ANNUAL CITATION**—Presented to the outstanding senior in journalism.

**MEN'S LEAGUE CERTIFICATES**—Offered for outstanding achievement, character, and service to the University.

**MEN'S LEAGUE CUP**—This award is offered by the Men's League to the graduating male senior who has done the most for the male student body.

**NATIONAL SOCIETY OF FIRE PROTECTION ENGINEERS AWARDS**—Presented to the most outstanding senior and sophomore in the Fire Protection curriculum.

**OMICRON NU SORORITY MEDAL**—This honorary sorority awards a medal annually to the freshman woman in the College of Home Economics who attains the highest scholastic average during the first semester.

**PHI BETA KAPPA ASSOCIATION AWARD**—This award is presented to the graduating senior with the highest cumulative scholastic average whose basic course program has been in the liberal studies.

**PHI CHI THETA KEY**—The Phi Chi Theta Key is awarded to the outstanding graduating senior woman in the College of Business and Public Administration on the basis of scholarship, activities, and leadership.

**PHI DELTA KAPPA AWARD**—Presented to an outstanding man in the graduating class of the College of Education.

**PI DELTA EPSILON NATIONAL MEDAL OF MERIT AWARDS**—Offered by the National Council of Pi Delta Epsilon to the outstanding senior woman and the outstanding senior man in Journalism activities.

**PI SIGMA ALPHA—FRED HAYS MEMORIAL AWARD**—This award, consisting of the sum of thirty dollars, is presented by an alumnus to the senior in Government and Politics having the highest average in departmental courses.

**PI TAU SIGMA AWARD**—An annual handbook award to the most outstanding sophomore in mechanical engineering on the basis of scholastic average and instructors' ratings.

**PUBLIC RELATIONS SOCIETY OF AMERICA**—The Baltimore Chapter of PRSA presents an annual citation to the outstanding senior majoring in public relations.

**SIGMA ALPHA OMICRON AWARD**—This award is presented to a senior student majoring in Bacteriology for high scholarship, character and leadership.

**ALGERNON SYDNEY SULLIVAN AWARD**—The New York Southern Society, in memory of its first president, awards annually medallions and certificates to one man and one woman of the graduating class and one non-student who evince in their daily life a spirit of love for and helpfulness to other men and women.

**TAU BETA PI AWARD**—The Maryland Beta Chapter of Tau Beta Pi Association, national engineering honor society, awards annually an engineer's handbook to the junior in the College of Engineering who during his sophomore year has made the greatest improvement in scholarship over that of his freshman year.

**WALL STREET JOURNAL STUDENT ACHIEVEMENT AWARD**—Awarded annually to the graduating senior who has maintained the highest scholastic achievement in the field of financial administration. The award consists of a silver medal embedded in clear plastic and one year's subscription to the *Wall Street Journal*.

## AIR FORCE ROTC AWARDS

**AFROTC ANGEL FLIGHT AWARD** presented to the outstanding member of the AFROTC Angel Flight.

**AIR FORCE TIMES AWARD** presented to the senior cadet at each detachment who has distinguished himself by contributing materially to constructive public attention for his cadet corps.

**AMERICAN LEGION AWARD** presented to the Senior Cadet for academic achievement in leadership.

**AMERICAN LEGION POST NO. 217 AWARD** presented to the Senior Cadet displaying outstanding leadership.

**ARMED FORCES COMMUNICATIONS MEDAL** awarded to the senior advanced cadet in recognition of outstanding achievement in the field of electronics, communications, or photography.

**ARNOLD AIR SOCIETY AWARD** presented to the Advanced Cadet selected by the Arnold Air Society as the cadet who has contributed the most to the advancement of AFROTC through activities of the Arnold Air Society.

**BETHESDA CHAPTER OF THE MILITARY ORDER OF WORLD WARS AWARD** given to the officer of the Vandenberg Guard who best exemplifies the ideals of leadership and service within the Vandenberg Guard.

**THE CHARLES M. DICKINSON MEMORIAL PLAQUE** awarded to the Junior Cadet who has shown leadership ability, outstanding individual characteristics and military bearing.

**CHICAGO TRIBUNE GOLD ROTC AWARDS** presented to the two sophomores who display highest leadership and officer potential.

**CHICAGO TRIBUNE SILVER ROTC AWARDS** presented to the two freshmen who display outstanding leadership and officer potential

**DISABLED AMERICAN VETERANS GOLD CUP** awarded to the Senior Cadet who has displayed outstanding leadership, scholarship, and citizenship.

**DISTINGUISHED AFROTC CADET BADGE** awarded to those seniors who possess outstanding qualities of leadership and high moral character and who meet the prescribed standings in their academic and military studies.

**GENERAL DYNAMICS AWARD** presented to the Sophomore Cadet displaying outstanding leadership and scholastic qualities and who has been selected for Advanced AFROTC.

**GLENN L. MARTIN AWARD** presented to the outstanding senior cadet who is majoring in Aeronautical Engineering and who has applied for pilot training in the United States Air Force.

**MILITARY ORDER OF WORLD WARS AWARD, FORT MEADE**, awarded to the outstanding graduate of the Cadet Leadership Academy.

**MILITARY SCIENCE AWARD** presented to outstanding member of the Scabbard and Blade Society.

**NATIONAL COMMANDERS AWARD** presented to the outstanding Pershing Rifleman in the country.

**NATIONAL DEFENSE TRANSPORTATION ASSOCIATION AWARD** presented to the senior cadet who qualifies for a baccalaureate degree in business administration and eligibility for the Air Transportation or Surface Transportation Officer Speciality and who has demonstrated outstanding leadership qualities, academic achievement, and aptitude for Air Force service.

**PERSHING RIFLES REGIMENTAL GOLD ACHIEVEMENT AWARD** presented to the outstanding member.



PERSHING RIFLES REGIMENTAL SILVER ACHIEVEMENT AWARDS presented to the outstanding members of the Pershing Rifles Squadron.

RESERVE OFFICERS ASSOCIATION SENIOR AWARD presented to the outstanding cadet of the Corps of Cadets.

RESERVE OFFICERS ASSOCIATION GOLD MEDAL AWARD presented to the outstanding junior in the Corps of Cadets.

RESERVE OFFICERS ASSOCIATION RIBBONS presented for outstanding achievement in AFROTC during the junior year.

SOCIETY OF AMERICAN MILITARY ENGINEERS AWARD presented to the senior cadet displaying outstanding scholastic achievement and leadership and majoring in the field of engineering.

SOCIETY OF AMERICAN MILITARY ENGINEERS COMPETITIVE AWARD presented to the junior cadet displaying outstanding achievement and leadership and majoring in the field of engineering.

SONS OF THE AMERICAN REVOLUTION AWARD presented to the cadet who exhibits in his work a high degree of merit with respect to leadership, military bearing, and excellence in his academic course of study.

VANDENBERG GUARD AWARD presented to the member of Vandenberg Guard displaying outstanding leadership.

## ATHLETIC AWARDS

THE ALVIN L. AUBINOE BASKETBALL TROPHY—This trophy is offered by Alvin L. Aubinoe for the senior who has contributed most to the squad.

THE ALVIN L. AUBINOE FOOTBALL TROPHY—This trophy is offered by Alvin L. Aubinoe for the unsung hero of the current season.

THE ALVIN L. AUBINOE TRACK TROPHY—This trophy is offered by Alvin L. Aubinoe for the senior who has contributed most to the squad during the time he was on the squad.

JOHN T. BELL SWIMMING AWARD—To the year's outstanding swimmer or diver.

LOUIS W. BERGER TROPHY—Presented to the outstanding senior baseball player.

WILLIAM P. COLE, III, MEMORIAL LACROSSE AWARD—This award, offered by the teammates of William P. Cole, III and the coaches of the 1940 National Champion team, is presented to the outstanding midfielder.

THE GEORGE C. COOK MEMORIAL SCHOLARSHIP TROPHY—Awarded annually to a member of the football team with the highest scholastic average.

JOE DECKMAN-SAM SILBER TROPHY—This trophy is offered by Joseph H. Deckman and Samuel L. Silber to the most improved defense lacrosse player.

GEARY F. EPPLEY AWARD—Offered by Benny and Hotsy Alperstein to the graduating male senior athlete who, during his three years of varsity competition, lettered at least once and attained the highest over-all scholastic average.

HALBERT K. EVANS MEMORIAL TRACK AWARD—This award, given in memory of "Hermie" Evans, of the Class of 1940, by his friends, is presented to the outstanding graduating senior trackman.

HERBERT H. GOODMAN TROPHY—This trophy is offered by Herbert H. Goodman to the most outstanding wrestler of the year.

CHARLES LEROY MACKERT TROPHY—This trophy is offered by William E. Krouse to the Maryland student who has contributed most to wrestling while at the University.

MARYLAND RING—The Maryland Ring is offered as a memorial to Charles L. Linhardt, of the Class of 1912, to the Maryland man who is adjudged the best athlete of the year.

CHARLES P. MC CORMICK TROPHY—This trophy is offered by Charles P. McCormick to the senior letterman who has contributed most to swimming during his collegiate career.

ANTHONY C. NARDO MEMORIAL TROPHY—This trophy is awarded to the best football lineman of the year.

**EDWIN POWELL TROPHY**—This trophy is offered by the Class of 1913 to the player who has rendered the greatest service to lacrosse during the year.

**SILVESTER WATCH FOR EXCELLENCE IN ATHLETICS**—A gold watch, given in honor of former president of the University, R. W. Silvester, is offered annually to "the man who typifies the best in college athletics."

**TEKE TROPHY**—This trophy is offered by the Maryland Chapter of Tau Kappa Epsilon Fraternity to the student who during his four years at the University has rendered the greatest service to football.

**ROBERT E. THEOFFLD MEMORIAL**—This trophy is presented by Dr. and Mrs. Harry S. Hoffman and is awarded to the golfer who most nearly exemplifies the competitive spirit and strong character of Robert E. Theoffld, a former member of the boxing team.

## STUDENT GOVERNMENT AWARDS

Keys are awarded to the members of the Executive Committee of the Student Government Association, Men's League, Association of Women Students, and other organizations who faithfully perform their duties throughout the year.

## SCHOLARSHIPS AND GRANTS-IN-AID

All requests for information concerning scholarships and grants-in-aid should be addressed to the Director of the Office of Student Aid, University of Maryland, College Park, Maryland. Regulations and procedures for the award of scholarships are formulated by the Committee on Financial Aids.

The Board of Regents of the University authorizes the award of a limited number of scholarships each year to deserving students. Applicants are subject to the approval of the Director of Admissions insofar as qualifications for admission to the University are concerned. All recipients are subject to the academic and non-academic regulations and requirements of the University.

Scholarships and grants are awarded to young men and women based upon apparent academic ability and financial need. In making awards, consideration is given to character, achievement, participation in student activities and to other attributes which may indicate success in college. It is the intent of the Committee to make awards to those qualified who might not otherwise be able to provide for themselves an opportunity for higher education.

The recipient of a scholarship or a grant is expected to make at least normal progress toward a degree. Normal progress toward a degree is defined by the Academic Probation Plan.

The Committee on Financial Aids reserves the right to review the scholarship program annually and to make adjustments in the amounts and recipients of awards in accordance with the funds available and scholastic attainment.

The types of scholarships, grants and loan funds available follow:

### FULL SCHOLARSHIPS

The University awards fifty-six full scholarships covering board, lodging, fixed charges, fees and books. Not more than twenty of these scholarships may be held by out-of-state students and at least twelve are reserved for women. Scholastic achievement and participation in student activities are given primary consideration in the award of these scholarships.

### UNIVERSITY GRANTS

The University awards to deserving and qualified secondary school graduates a limited number of grants covering fixed charges only.

### GENERAL ASSEMBLY GRANTS

These grants are for fixed charges and are awarded by members of the Legislature, three for each Senator and one for each member of the House of Delegates. They may be awarded by a member of the House of Delegates or by a Senator only to persons in the county or in the legislative district of Baltimore City which the Delegate or Senator represents. Awards of such grants are subject to approval by the Committee on Scholarships and by the Director of Admissions as to qualifications for admission.

### SPECIAL ACADEMIC SCHOLARSHIPS

A limited number of scholarships is awarded each year to students of exceptional academic ability out of funds derived from campus enterprises. The amount of these scholarships varies depending upon the extent of need.

#### TEACHER EDUCATION GRANTS

The General Assembly of Maryland provides grants equivalent to fixed charges to Maryland residents pursuing teacher education curricula on a full-time basis. Recipients agree to teach in Maryland public schools for at least two years immediately following graduation. The agreement form must be signed by the student and countersigned by the parent, guardian or other responsible adult.

#### GENERAL STATE TUITION SCHOLARSHIPS

The General Assembly of Maryland provides a number of limited tuition scholarships to students entering college for the first time. These scholarships may be used in any approved institution of higher education within the State. At the University of Maryland, they cover the item listed as fixed charges. Awards are made by the State Scholarship Board based upon financial need and the results of a competitive examination.

#### ENDOWED SCHOLARSHIPS AND GRANTS

The University has a number of endowed scholarships and special grants. These are paid for by income from funds especially established for this purpose. Brief descriptions of these awards follow:

**ALBRIGHT SCHOLARSHIP**—The Victor E. Albright Scholarship is open to graduates of Garrett County high schools who were born and reared in that county.

**ALCOA FOUNDATION TRAFFIC SCHOLARSHIP**—an award of \$500 is given to an outstanding junior student majoring in Transportation in the College of Business and Public Administration.

**ALPHA PHI OMEGA (EPSILON MU CHAPTER) SCHOLARSHIP**—This scholarship is awarded annually to a freshman student having a background in the Boy Scouts of America.

**ALUMNI SCHOLARSHIPS**—The General Alumni Council of the University Alumni Association provides eleven scholarships in the amount of \$250 each to be awarded respectively to schools or colleges represented on the Alumni Council. The awards are based on scholarship, leadership and need.

**ALUMNI ASSOCIATION OF MONTGOMERY COUNTY SCHOLARSHIPS**—A limited number of scholarships are available to residents of Montgomery County.

**ALUMNI ASSOCIATION OF THE SCHOOL OF PHARMACY SCHOLARSHIPS**—The Alumni Association of the School of Pharmacy of the University of Maryland makes available annually scholarships to qualified pre-pharmacy students on the basis of worthiness, moral character, scholastic achievement and the need for financial assistance. These scholarships are open only to residents of the State of Maryland. Each scholarship not exceeding \$500.00 per academic year is applied in partial defrayment of fees and expenses at College Park.

**ALUMNI BAND SCHOLARSHIP**—A limited number of awards to freshmen are sponsored by the University of Maryland Band Alumni Organization. Recipients are recommended by the Music Department after a competitive audition held in the spring.

**AMERICAN SOCIETY FOR METALS SCHOLARSHIP IN METALLURGY**—A scholarship of \$500 is available to a competent student in the field of Metallurgy. The award will be made by the faculty in Metallurgy in accordance with the general principles underlying the award of all scholarships in the University.

**ETHEL R. ARTHUR MEMORIAL SCHOLARSHIP**—This memorial scholarship fund has been established by Irving J. Cohen, M.D. At least one \$250.00 award is made each year by the Scholarship Committee. A preference is given to students from Baltimore.

**ALVIN L. AUBINOE STUDENT AID PROGRAM**—Scholarship grants up to \$500 per school year to students in engineering, preferably those studying for careers in civil engineering, architecture or light construction.

**BALTIMORE PANHELLENIC ASSOCIATION SCHOLARSHIP**—A scholarship is awarded annually by the Baltimore Panhellenic Association. This scholarship will be awarded to a student entering the junior or senior class, who is an active member of a sorority, who is outstanding in leadership and scholarship and who needs financial assistance and is recommended by the Office of the Dean of Women.

**BALTIMORE SUNPAPERS SCHOLARSHIP IN JOURNALISM**—The Board of Trustees of the A. S. Abell Foundation, Inc., contributes funds to provide one or more \$500 scholarships to students majoring in editorial journalism.

**SAMUEL WOLFE BLANKMAN GRANT**—The sum of \$100 is awarded each year to a foreign student on the basis of worth and need to be determined by the Committee on Scholarships. The student must be a permanent resident of a country other than the United States, its possessions, or Canada. He may be a member of any college or school in the University.



**BORDEN AGRICULTURAL AND HOME ECONOMICS SCHOLARSHIPS**—A Borden Agricultural Scholarship of \$300 is granted to that student in the College of Agriculture who has had two or more of the regularly listed courses in dairying and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

A Borden Home Economics Scholarship of \$300 is granted to that student in the College of Home Economics who has had two or more of the regularly listed courses in foods and nutrition and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

**COLORTONE GRAPHIC ARTS AND PUBLICATION SCHOLARSHIP**—A scholarship of \$500.00 is made available annually by the Colortone Press, Inc. of Washington, D. C. to a senior recommended by the Department of Journalism and Public Relations and majoring in public relations. The recipient is also offered an opportunity of a supervised internship during the summer preceding his senior year.

**GEORGE C. COOK SCHOLARSHIP**—A full scholarship is made available by the Maryland Educational Foundation in memory of the late George C. Cook. The scholarship shall be administered under the same rules as a University Scholarship. Preference shall be given to students interested in a career in business administration or marketing.

**DR. ERNEST N. CORY SCHOLARSHIP**—This award is made annually to an outstanding junior or senior recommended by the College of Agriculture, preferably one majoring in Entomology. The amount of the award will vary depending upon the earnings of a trust fund established in honor of Dr. Ernest N. Cory upon his retirement.

**COUNTY ENGINEERS ASSOCIATION OF MARYLAND SCHOLARSHIP**—A scholarship of \$200.00 is available to a Maryland County resident beginning his third year in Civil Engineering, with the possibility of renewal for the senior year.

**DAIRY TECHNOLOGY SCHOLARSHIPS AND GRANTS**—The Dairy Technology Society of Maryland and the District of Columbia provides a limited number of scholarships and grants-in-aid for students majoring in Dairy Products Technology. These awards are available both to high school graduates entering the University as freshmen and to students who have completed one or more years of their University curriculum. The purpose of these awards is to encourage and stimulate interest in the field of milk and milk products. The awards are based on scholarship, leadership, personality, need, experience, interest in and willingness to work in the field of dairy technology. These awards are made by the Committee on Scholarships and Grants-in-Aid in cooperation with the Dairy Technology Society.

**DELMARVA TRAFFIC CLUB SCHOLARSHIP**—an award of \$250 is given to a junior or senior student from the Delmarva Peninsula majoring in Transportation in the College of Business and Public Administration.

**DOUGLAS AIRCRAFT COMPANY SCHOLARSHIP**—An \$800.00 scholarship to be awarded to an outstanding and deserving senior student in aeronautical, electrical, or mechanical engineering in this order of preference. Candidates recommended by the University must be citizens of the United States and have the approval of the Scholarship Board of the Douglas Aircraft Company. Preference should also be given to students who indicate a willingness to accept employment in California.

**EXEL SCHOLARSHIPS**—A substantial grant for endowed scholarships was made by Deborah B. Exel. These awards are made by the Committee on Scholarships to worthy students in accordance with the general principles underlying the award of all other scholarships.

**ANNE ARUNDEL COUNTY VOLUNTEER FIREMEN'S ASSOCIATION GRANT**—This grant is awarded to a high school graduate who will enroll in the Fire Protection Curriculum in the College of Engineering. The amount of the award is \$300 per year and will be available to the recipient for the normal period of time to complete the program being pursued. This grant is awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Anne Arundel County Volunteer Fireman's Association and the College of Engineering.

**DISTRICT OF COLUMBIA FIRE FIGHTERS ASSOCIATION GRANT**—A \$150.00 grant is awarded to a student who has completed his freshman year or has advanced standing in the Fire Protection Curriculum. The award is made in cooperation with Fire Protection Department of the College of Engineering.

**DISTRICT OF COLUMBIA FIRE FIGHTERS ASSOCIATION, I.A.F.F. GRANT**—This award is made to a student who has completed his freshman year in the Fire Protection Curriculum of the College of Engineering. The award will be in the amount of \$150.00 per year to be applied to the expense of fixed charges, tuition and fees. This award is made in cooperation with the Fire Fighters Association and the Fire Protection Department of the College of Engineering.

**HASKINS AND SELLS FOUNDATION INC. AWARD**—a scholarship of \$500 is provided for an exceptional senior student majoring in accounting in the College of Business and Public Administration.

**LADIES AUXILIARY TO THE MARYLAND STATE FIREMEN'S ASSOCIATION GRANT**—This grant is awarded to an outstanding high school graduate who will enroll in the Fire Protection Curriculum in the College of Engineering. The amount of this award is \$500 per year and will be available to the recipient for the normal period of time to complete the program being pursued. This grant is awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Ladies Auxiliary to the Maryland State Firemen's Association and the College of Engineering.

**MARYLAND MOTOR FLEET SUPERVISORS AWARD**—an award of \$200 is given to a junior student with an interest in motor fleet work majoring in transportation in the College of Business and Public Administration.

**MARYLAND STATE FIREMEN'S ASSOCIATION GRANT**—A \$300 scholarship is awarded annually to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. This scholarship is for four years and is awarded to a student of high scholastic ability with a reputation of good character and outstanding fire service interest. The award is made by the Faculty Committee on Scholarships in cooperation with the Maryland State Firemen's Association and the Fire Protection Department of the College of Engineering.

**PILOT FREIGHT CARRIERS, INC., AWARD**—A five hundred dollar award is made to a senior student in the College of Business and Public Administration who has majored in transportation and who has demonstrated competence in this field of study. This award is made through the College of Business and Public Administration.

**PRINCE GEORGES COUNTY VOLUNTEER FIREMEN'S ASSOCIATION GRANT**—An annual scholarship of \$300 is awarded to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. The award is based on high scholastic ability, good character and outstanding fire service interest. The Faculty Committee on Scholarships and Grants-in-Aid cooperates with the Fire Protection Department of the College of Engineering and the Board of Directors of the Prince Georges County Volunteer Firemen's Association in selecting the student.

**NATIONWIDE FOUNDATION FIRE SAFETY SCHOLARSHIP**—The expense of fixed charges, tuition and fees, not to exceed \$600.00 per year, for a maximum period of two years is awarded to a student who is entering his junior or senior year of study in the Fire Protection Curriculum of the College of Engineering. This award is made in cooperation with the Director of Safety of The Nationwide Insurance Company and The Fire Protection Department of the College of Engineering.

**FOOD FAIR STORES FOUNDATION SCHOLARSHIPS**—Each year a number of scholarships is made available by the Food Fair Stores Foundation to students from Anne Arundel, Baltimore, Harford, Prince Georges, Washington, Frederick, Montgomery, and Talbot counties and Baltimore City. Students receiving these scholarships may pursue any of the four-year curriculums of the University. The scholarships are for \$250 for an academic year.

**VICTOR FRENKIL SCHOLARSHIP**—A scholarship of \$250 is granted annually by Mr. Victor Frenkil of Baltimore to a student from Baltimore City in the freshman class of the University.

**FUTURE NURSES CLUBS SCHOLARSHIPS**—A limited number of \$300.00 scholarships are made available by the Future Nurses Clubs of Maryland which are sponsored by the Women's Auxiliary of the Medical and Chirurgical Faculty of Maryland and the Maryland League for Nursing. These scholarships are available to freshmen students from Maryland preparing for nursing.

**GAMMA PHI BETA ALUMNI SCHOLARSHIP**—Two annual scholarships are available to teachers employed in the teaching field. The awards pay tuition costs of graduate courses designed for training teachers of gifted children. The awards are made available by the Washington Alumnae Chapter of the Gamma Phi Beta Sorority. Recipients are recommended by the Coordinator of Special Education on the basis of scholarship and need.

**GENERAL MOTORS SCHOLARSHIP**—This scholarship granted annually to any young man or young woman who is an outstanding individual entering the freshman year. The amount of the stipend depends upon the demonstrated need of the individual. The College Scholarship Service evaluates the financial need in each case.

**GODDARD MEMORIAL SCHOLARSHIPS**—Four \$500 scholarships are available annually under the terms of the James and Sarah E. R. Goddard Memorial Fund established through the wills of Morgan E. Goddard and Mary Y. Goddard. In granting these awards the Committee on Scholarships will consider outstanding scholastic achievement and financial need. Each award will be made on a year-to-year basis depending upon the accomplishment of the student.

**GORDON-DAVIS LINEN SUPPLY SCHOLARSHIP**—The Gordon-Davis Linen Supply Company provides a grant to be granted to worthy students by the Committee on Scholarships and Grants-In-Aid.

**ROSE L. GRANT SCHOLARSHIP**—At least \$500.00 each year is made available to be awarded by the Scholarship Committee in accordance with its established principles.

**JOHN WILLIAM GUCKEYSON MEMORIAL SCHOLARSHIP**—A scholarship of \$100.00 is granted annually by Mrs. Hudson Dunlap as a memorial to John William Guckeyson, an honored Maryland alumnus.

**JAMES HARTIN ENGINEERING SCHOLARSHIP AND DONALD PETER SHAW MEMORIAL SCHOLARSHIP**—These two scholarships of \$300.00 each are made available annually by Mr. & Mrs. David C. Hartin. The first is awarded to a male student in the College of Engineering and the second to a male student in any college other than Education, or to a female student in Nursing. These awards will be made annually by the Scholarship Committee to worthy students who are helping to earn their own college expenses.

**WILLIAM RANDOLPH HEARST FOUNDATION SCHOLARSHIPS**—These scholarships are made available through a gift of the Baltimore News-Post, one of the Hearst newspapers, in honor of William Randolph Hearst. Scholarships up to \$1000 are awarded annually to undergraduates pursuing a program of study in journalism. Scholarships up to \$1,000 are awarded annually for graduate study in history. These scholarships are awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Departments of History and Journalism.

**INTER-REGIONAL INSURANCE CONFERENCE SCHOLARSHIPS**—Fifteen awards are made annually for room, board, tuition, and fees to outstanding high school students enrolling in the Fire Protection Curriculum of the College of Engineering. Students residing in eleven states in the Conference area and the District of Columbia are eligible for these scholarships. Employment obligations are required. Recipients of scholarships are selected by the Scholarship Committee of the Inter-Regional Insurance Conference in cooperation with the Faculty Committee on Scholarships.

**IOTA LAMBDA SIGMA (NU CHAPTER) SCHOLARSHIP**—This scholarship is awarded annually to a male student who wishes to enroll or is enrolled in the Industrial Education curriculum. The student must be a resident of the State of Maryland and signify his intention of teaching in Maryland. The amount of the scholarship is \$200.00.

**KAPPA ALPHA THETA ALUMNI SCHOLARSHIP**—An annual award of \$500.00 is made available to a senior or graduate student studying speech therapy, by the Washington Alumni Chapter of the Kappa Alpha Theta Sorority. The recipient shall be recommended by the head of the Speech Department.

**KAPPA KAPPA GAMMA ALUMNAE SCHOLARSHIP IN SPEECH THERAPY**—An annual scholarship of \$250.00 is awarded to a deserving woman duly admitted as a graduate student majoring in the field of speech therapy. The award is based upon the applicant's demonstrated interest in speech therapy as a career, academic accomplishments and initiative. This scholarship is awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Suburban Washington Alumnae Association of Kappa Kappa Gamma and the Speech Department.

**KAPPA KAPPA GAMMA NURSING SCHOLARSHIP**—This \$100.00 Scholarship is made available annually by the Gamma Psi chapter of the Kappa Kappa Gamma Sorority to a worthy student preparing for a career in nursing. Preference for the award shall be given to an entering student from Maryland and she shall have a preference for its continuance while she is a student at College Park.

**VENIA M. KELLER GRANT**—The Maryland State Council of Homemakers' Clubs makes available this grant of \$100 which is open to a Maryland young man or woman of promise who is recommended by the College of Home Economics.

**KIWANIS SCHOLARSHIP**—A Kiwanis Memorial Scholarship covering tuition is awarded by the Prince Georges County Kiwanis Club to a male resident of Prince Georges County, Maryland, who, in addition to possessing the necessary qualifications for maintaining a satisfactory scholarship record, must have a reputation of high character and attainment in general all-around citizenship.

**LEIDY CHEMICAL FOUNDATION SCHOLARSHIP**—A scholarship of \$500.00 is granted annually to a graduate or undergraduate student preparing for a career in the general field of chemistry. The award is made by the Committee on Scholarships and Grants-In-Aid in cooperation with the Department of Chemistry.

**HELEN ALETTA LINTHICUM SCHOLARSHIPS**—These scholarships, several in number, were established through the benefaction of the late Mrs. Helen Aletta Linthicum, widow of the late Congressman Charles J. Linthicum, who served in Congress from the Fourth District of Maryland for many years. They are granted to worthy young men and women who are residents of the State of Maryland and who have satisfactory high school records, forceful personality, a reputation for splendid character and citizenship, and the determination to get ahead.

**LIONS INTERNATIONAL SCHOLARSHIP**—An award of \$500.00 is available to a freshman who competes in the Lions Club (District 22-C) Annual Band Festival. A recipient is recommended by the Music Department after a competitive audition in the spring.



**THE M CLUB GRANTS**—The M Club of the University of Maryland provides each year a limited number of awards. They are granted by the Committee on Scholarships to applicants who show promise in sports other than football.

**DR. FRANK C. MARINO SCHOLARSHIP**—Dr. Frank C. Marino provides a \$200 annual scholarship in Nursing Education. As vacancies in this scholarship occur, it is awarded by the Committee on Scholarships to a student who demonstrates special interest and promise in this field.

**MARYLAND EDUCATIONAL FOUNDATION GRANTS**—The Maryland Educational Foundation provides funds each year for the education of several promising young men. These grants are awarded by the Committee on Scholarships to applicants who qualify under the provisions of the Foundation.

**MARYLAND CONSUMER FINANCE SCHOLARSHIP**—A scholarship fund of \$500.00 per year is made available by the Maryland Consumer Finance Association. It may be awarded to one student or divided and awarded to two students. The awards are made to Maryland residents.

**MARYLAND PHARMACEUTICAL ASSOCIATION SCHOLARSHIPS**—The Maryland Pharmaceutical Association makes available annually scholarships to pre-pharmacy students on the basis of worthiness, moral character, scholastic achievement and the need for financial assistance. Each scholarship not exceeding \$500.00 per academic year is used in partial defrayment of fees and expenses at College Park. These scholarships are open only to residents of the State of Maryland.

**EUGENE E. AND AGNES F. MEYER SCHOLARSHIPS**—A number of scholarships is made available each year to promising students in meeting the costs of furthering their education, with preferential consideration to children of persons employed in public service, including service in the armed forces and the judiciary.

**MORTAR BOARD SCHOLARSHIP**—The Mortar Board Scholarship is awarded annually to a woman student on the basis of scholastic attainment, character, and need. The selection of the student for this award is made through the Office of the Dean of Women and a representative of Mortar Board in cooperation with the Committee on Scholarships.

**OMICRON NU AWARD**—This award is presented annually to the sophomore student in the College of Home Economics who attained the highest scholastic average during her freshman year.

**PENINSULA HORTICULTURAL SOCIETY SCHOLARSHIP**—The Peninsula Horticultural Society provides annually a \$200 scholarship to the most deserving junior or senior student, a resident of Maryland from the Eastern Shore counties, who is majoring in Horticulture or related subjects, particularly as they apply to the culture of fruits and vegetables.

**PHI BETA KAPPA SCHOLARSHIP**—A scholarship is awarded to the student who at the end of the junior year has attained the highest cumulative average in liberal courses and whose basic course program is in liberal studies.

**PHI ETA SIGMA SCHOLARSHIP**—A limited number of \$100 scholarships are available to young men entering the sophomore class and who have achieved an academic average of 3.5 or higher during the freshman year. Funds for the awards are made available by the Phi Eta Sigma Fraternity.

**READ'S DRUG STORES FOUNDATION SCHOLARSHIPS**—The Read's Drug Stores Foundation contributes annually several scholarships to pre-pharmacy students on the basis of worthiness, scholastic achievement, moral character and the need for financial assistance. Each scholarship not exceeding \$500.00 per academic year is applied to defray partially the fees and expenses at College Park, Maryland. Recipients must have been residents of the State of Maryland for at least one year prior to the awarding of the scholarship.

**DR. FERN DUEY SCHNEIDER GRANT**—A \$100.00 grant is available to a foreign woman student enrolled in the College of Education, and who has completed at least one semester in residence at the University. Funds for the grant are contributed by the Montgomery and Prince Georges County Chapters of the Delta Kappa Gamma Society.

**THE SEARS ROEBUCK FOUNDATION GRANTS**—Eight grants of \$300 each are provided by the Sears Roebuck Foundation to the sons of Maryland residents engaged in agricultural pursuits who enroll in the freshman class of the College of Agriculture. One \$300 grant is awarded each year to the sophomore student in the College of Agriculture who has proved to be the outstanding student holding a Sears Roebuck grant during the previous year. These grants are awarded annually by the Committee on Scholarships.

A limited number of similar grants from the Sears Roebuck Foundation is also available for students in the College of Home Economics.

**SOUTHERN STATES COOPERATIVE SCHOLARSHIPS**—Two scholarships are awarded each year to sons of Southern States members—one for outstanding work in 4-H Club and the other for outstanding work in FFA. The amount of each scholarship is \$300 per year and will continue for four years. These scholarships are awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Agriculture.

**ADELE H. STAMP SCHOLARSHIP**—This scholarship of \$250.00 is awarded annually to a sophomore who is an active sorority member or pledge, who is outstanding in leadership and scholarship and who needs financial assistance. Funds for this scholarship are provided by the University of Maryland Panhellenic Association. The recipient is recommended by the office of the Dean of Women.

**STEEL CLUB OF BALTIMORE SCHOLARSHIP**—This is a renewable scholarship of \$500.00 per year. Male residents of Maryland who have expressed their intention of entering the steel industry on completion of their formal education are eligible.

**STEEL SERVICE CENTER SCHOLARSHIP**—A renewable scholarship of \$350.00 per year is made available by various steel clubs of Baltimore. The award is made in accordance with the general principles underlying all other scholarships.

**JANIE G. S. TALIAFERRO SCHOLARSHIP**—Under the terms of the will of the late Janie G. S. Taliaferro a bequest has been made to the University of Maryland to provide scholarship aid to worthy students. The income of the estate amounting to \$350 annually is used as a scholarship to a worthy young man or young woman who qualifies.

**J. MCKENNY WILLIS AND SON GRANT**—A grant of \$500 is made available annually by J. McKenny Willis and Son, Inc., Grain, Feed and Seed Company of Easton, Maryland, to an outstanding student in vocational agriculture in Talbot County who will matriculate in the College of Agriculture. This grant is assigned by the Committee on Scholarships in accordance with the terms of the award.

**R. M. WATKINS SCHOLARSHIP**—This scholarship is made available under the same terms and conditions as a Full University Scholarship from funds provided by the Maryland Educational Foundation.

**WESTERN ELECTRIC SCHOLARSHIP**—Two scholarships are awarded to students in the College of Engineering. The amount of the scholarship covers cost of tuition, books and fees not to exceed \$800 nor to be less than \$400.

**WESTINGHOUSE AIR ARM DIVISION SCHOLARSHIP**—The Westinghouse Electric Corporation has established a scholarship to encourage outstanding students of engineering and the physical sciences. The scholarship is awarded to a sophomore student and is paid over a period of three years in six installments of \$250. Students in electrical or mechanical engineering, engineering physics or applied mathematics are eligible for the award. Selection of the recipient is based on achievement as reflected by scholastic standing and general college record. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

**WOMEN'S CLUB OF BETHESDA SCHOLARSHIP**—Two \$250.00 scholarships have been made available to young women residents of Montgomery County by the Women's Club of Bethesda. Recipients must be accepted in the College of Education or the College of Nursing.

**THE ARTHUR YOUNG AND CO. FOUNDATION, INC. SCHOLARSHIP**—The Arthur Young and Co. Foundation, Inc., makes available a scholarship of \$750 for an exceptional senior student concentrating in accounting who is registered in the College of Business and Public Administration. This award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Business and Public Administration.

## STUDENT LOANS

**NDEA STUDENT LOANS**—The National Defense Education Act of 1958 provides funds for student loans. A student may borrow in one year a sum not exceeding \$800 and during his entire course of study may borrow a sum not exceeding \$5,000. The borrower must sign a note for the loan and agree to interest and repayment terms established by the University. Repayment of the loan begins one year after the borrower ceases to be a full time student and must be completed within ten years thereafter. No interest is charged on the loan until the beginning of the repayment schedule. Interest after that date is to be paid at the rate of 3 percent per annum.

The National Defense Education Act contains a provision which provides that up to fifty percent of a student loan plus interest may be cancelled in the event the borrower becomes a full time elementary or secondary school teacher. Such cancellation is to be at the rate of 10 percent a year to five years.

**CATHERINE MOORE BRINKLEY LOAN FUND**—Under the will of Catherine Moore Brinkley, a loan fund is available for worthy students who are natives and residents of Maryland.

JOSEPH W. KINGHORN AND MORLEY A. JULL FUNDS—Memorial trust funds have been established in honor of Joseph W. Kinghorn, first graduate of the University of Maryland Poultry Department. These funds are available as loans to students enrolled in the Poultry Department.

EDNA B. MCNAUGHTON MEMORIAL LOAN FUND—This fund has been established by Mrs. W. B. Clayton in memory of Edna B. McNaughton who initiated and developed the program in Early Childhood Education at the University of Maryland. Priority is given to students enrolled in this program.

PHI DELTA GAMMA LOAN FUND—This fund has been established under essentially the same terms and conditions as the NDEA loans. Recipients must be recommended by the Sigma Chapter of the Phi Delta Gamma Sorority.

JAN STEVEN AND SIDNEY RAPKE MEMORIAL LOAN FUND—This fund has been established in memory of Jan Steven Rapke by his parents. Short-term, interest free loans are available to students in good standing to meet personal emergencies as they arise. It is the wish of the donors that the fund be administered with a minimum of formality.

UNITED STUDENT AID FUNDS—Loans up to \$1,000.00 per year are available from many Maryland banks to students who have completed one year or more of study at the University of Maryland, and are making normal progress toward graduation. Maximum interest on such loans is 6 per cent simple, and repayment is due within 36 months after the student ceases to be a full time student.

SIEGFRIED E. WEISBERGER JR. MEMORIAL FUND—A memorial trust fund has been established in honor of Siegfried Weisberger, Jr., a Freshman student in Agriculture in 1958-59. Under terms of this loan, students in Agriculture may borrow money without interest for short term needs.

THE ARTHUR YOUNG & CO. FOUNDATION, INC. AWARD—awards are made to a number of superior senior students majoring in accounting in the College of Business and Public Administration.

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*CATALOG OF THE*  
COLLEGE  
OF  
AGRICULTURE  
1964-66

THE  
UNIVERSITY  
OF  
MARYLAND

*Volume 19*

*December 23, 1963*

*Number 11*

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The provisions of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

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# UNIVERSITY CALENDAR, 1963-64

## *Fall Semester 1963*

September 16-20 Monday-Friday  
September 23 Monday  
November 27 Wednesday

December 1 Monday

December 20 Friday

Fall Semester Registration  
Instruction Begins  
Thanksgiving Recess Begins  
After Last Class  
Thanksgiving Recess Ends  
8 a.m.  
Christmas Recess Begins After  
Last Class

## *1964*

January 6 Monday  
January 22 Wednesday  
January 23-30 Thursday-Wednesday  
inclusive

Christmas Recess Ends 8 a.m.  
Pre-Examination Study Day  
Fall Semester Examinations

## *Spring Semester*

February 3-7 Monday-Friday  
February 10 Monday  
February 22 Saturday  
March 25 Wednesday  
March 26 Thursday

March 31 Tuesday  
May 13 Wednesday  
May 28 Thursday  
May 29-June 5 Friday-Friday  
May 30 Saturday  
May 31 Sunday  
June 6 Saturday

Spring Semester Registration  
Instruction Begins  
Washington's Birthday, Holiday  
Maryland Day, not a holiday  
Easter Recess Begins After Last  
Class  
Easter Recess Ends, 8 a.m.  
AFROTC Day  
Pre-Examination Study Day  
Spring Semester Examinations  
Memorial Day, Holiday  
Baccalaureate Exercises  
Commencement Exercises

## *Summer Session 1964*

June 22 Monday  
June 23 Tuesday  
July 4 Saturday  
August 14 Friday

Summer Session Registration  
Summer Session Begins  
Independence Day, Holiday  
Summer Session Ends

## *Short Courses 1964*

June 15-19 Monday-Saturday  
August 3-7 Monday-Saturday  
September 8-11 Tuesday-Friday

Rural Women's Short Course  
4-H Club Week  
Firemen's Short Course

# UNIVERSITY CALENDAR, 1964-65

(Tentative)

## *Fall Semester 1964*

September 14-18	Monday-Friday	Fall Semester Registration Instruction Begins
September 21	Monday	Thanksgiving Recess Begins
November 25	Wednesday	After Last Class
November 30	Monday	Thanksgiving Recess Ends 8 a.m.
December 22	Tuesday	Christmas Recess Begins After Last Class

## *1965*

January 4	Monday	Christmas Recess Ends 8 a.m.
January 20	Wednesday	Pre-Examination Study Day
January 21-27	Thursday-Wednesday	Fall Semester Examinations

## *Spring Semester*

February 2-5	Tuesday-Friday	Spring Semester Registration
February 8	Monday	Instruction Begins
February 22	Monday	Washington's Birthday, Holiday
March 25	Thursday	Maryland Day, not a Holiday
April 15	Thursday	Easter Recess Begins After Last Class
April 20	Tuesday	Easter Recess Ends 8 a.m.
May 12	Wednesday	AFROTC Day
May 27	Thursday	Pre-Examination Study Day
May 28-June 4	Friday-Friday	Spring Semester Examinations
May 30	Sunday	Baccalaureate Exercises
May 31	Monday	Memorial Day, Holiday
June 5	Saturday	Commencement Exercises

## *Summer Session*

June 21	Monday	Summer Session Registration
June 22	Tuesday	Summer Session Begins
July 5	Monday	Independence Day, Holiday
August 13	Friday	Summer Session Ends

## *Short Courses*

June 14-18	Monday-Friday	Rural Women's Short Course
August 2-6	Monday-Friday	4-H Club Week
September 7-10	Tuesday-Friday	Firemen's Short Course

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# THE COLLEGE

The College of Agriculture offers an educational program designed to prepare students for careers in agricultural sciences, agricultural technology and agricultural business. Students receive a basic fundamental and cultural education, correlated with technical agricultural courses and related sciences.

The College of Agriculture is the oldest division of the University of Maryland at College Park. The institution was chartered in 1856 under the name of the Maryland Agricultural College. For three years the College was under private management. When Congress passed the Land Grant Act in 1862, the General Assembly of Maryland accepted it for the state and named the Maryland Agricultural College as the beneficiary. When the institution was merged in 1920 with the University of Maryland in Baltimore, the College of Agriculture took its place as one of the major divisions of this larger, more comprehensive organization.

In addition to teaching, the College of Agriculture includes the Agricultural Experiment Station and the Extension Service. They were established as the result of acts passed by Congress in 1887 and 1914 respectively. A more complete description of these two services appears later in this bulletin.

## GENERAL INFORMATION

Graduates of the College of Agriculture are trained for employment in scientific areas related to agriculture, in agricultural business and industry or with a local, state or federal agency. Curricula in the College of Agriculture provide for broad training in cultural and scientific courses as well as in courses related to various areas of agricultural specialization. Programs are offered for: (1) those planning to pursue the agricultural sciences and who plan to do graduate study; (2) those planning to pursue the business activities in agricultural and related industries, and (3) those planning to pursue the technology of animal and plant production, the engineering, chemistry, and food processing of agricultural products as well as teaching and extension in agriculture.

Many professors also conduct research studies in their respective fields. Through these studies the frontiers of knowledge are constantly being extended. These new findings are incorporated in courses thereby making the instruction in agriculture dynamic.

The close relationship of extension specialists, county agents, and home demonstration agents with farmers and farm families enables workers in the College to evaluate the farm situation. New farm problems are brought

## GENERAL INFORMATION

to the attention of the research worker and new developments are presented to farmers and their families.

The coordination of teaching, research and extension provides for the effective training of students in the College of Agriculture for a career in agriculture. Many professors also contribute to the research and extension programs concerned with agriculture and food production, the development of new varieties and processing procedures, as well as adjustments in agricultural production and marketing.

Trained workers in the College of Agriculture, through regulatory and service activities, are constantly working with actual problems associated with the improvement and maintenance of standards for farm products. Regulatory and control work extends over a wide range of activities and concerned with reducing losses due to insect pests and diseases; preventing and controlling serious outbreaks of diseases and pests of animals and plants; analyzing fertilizer, feed and lime for guaranteed quality; and analyzing and testing germination quality of seeds to insure better seeds for farm planting. Marketing services include federal-state inspection, fresh egg law, dairy inspection, seed inspection, weight and measures and market news service.

## SPECIAL ADVANTAGES

The University of Maryland is within a few miles of the Agricultural Research Center of the United States Department of Agriculture. This is the largest, best manned, and best equipped agriculture research agency in the world. Also, the University of Maryland is within a few miles of the Washington, D. C., offices of the Department of Agriculture and other government departments, including the Library of Congress. Students can easily visit these agencies and become acquainted with their work and the men who conduct this work. Such contacts have proved valuable to many University of Maryland graduates.

Also, it is not uncommon for men from these agencies to speak before classes at the University and to be guest speakers at student club meetings and otherwise take part in student activities. No other college of agriculture in the United States is physically located to offer like opportunities to its students.

## COORDINATION OF AGRICULTURAL WORK

The strength of the College of Agriculture of the University of Maryland lies in the close coordination of the instructional, research, extension, and regulatory functions within the individual departments, between the several departments, and in the institution as a whole. Instructors in the several departments are closely associated with the research, extension and regulatory work being carried on in their respective fields, and in many cases, devote a portion of their time to one or more of these types of activities. Close coordination of these four types of work enables the University to

## GENERAL INFORMATION

provide a stronger faculty in the College of Agriculture, and affords a higher degree of specialization than would otherwise be possible. It insures instructors an opportunity to keep informed on the latest results of research, and to be constantly in touch with current trends and problems which are revealed in extension and regulatory activities. Heads of departments hold staff conferences to this end, so that the student at all times is as close to the developments in the frontiers of the several fields of knowledge as it is possible for an organization to put him.

In order that the work of the College shall be responsible to agriculture interests and shall adequately meet the needs of the several agricultural industries in the state, and that the course of instruction shall at all times be made most helpful for students who pursue them, advisory councils have been constituted in the major industries of agriculture. The councils are composed of leaders in the respective lines of agriculture in Maryland, and the instructional staff of the College of Agriculture has the benefit of their counsel and advice. By this means the College, the industries, and the students are kept abreast of developments.

## FACILITIES AND EQUIPMENT

In addition to buildings, laboratories, libraries, and equipment for effective instruction in the related basic sciences and in the cultural subjects, the University of Maryland is provided with excellent facilities for research and instruction in agriculture. University farms, totaling more than 2,000 acres, are operated for instructional and investigational purposes. One of the most complete and modern plants for dairy and animal husbandry work in the country, together with herds of the principal breeds of dairy and beef cattle, and other livestock, provides facilities and materials for instruction and research in these industries. Excellent laboratory and field facilities are available in the Agronomy Department for breeding and selection in farm crops, and for soils research. The Poultry Department has a building for laboratories and classrooms, a plant comprising twenty acres, and flocks of the important breeds of poultry. A research farm is available for experimental testing under field conditions. The Horticulture Department is housed in a separate building, and has ample orchards, gardens and greenhouses for its various lines of work. A research farm is located near Salisbury where experimental work is carried on in the area of intense production. The Botany Department has excellent facilities available in laboratories, greenhouses, and field space for research in most phases of botany, especially in plant pathology, plant physiology, cytology and cytogenetics. A powerful X-ray machine, ultra centrifuge, and an electron microscope are the major pieces of equipment available; facilities for use of radio-isotopes are available for both teaching and research.

## COSTS

Actual annual costs of attending the University include: \$250.00 fixed charges; \$96.00 special fees; \$420.00 board; \$290.00 to \$320.00 lodging



## GENERAL INFORMATION

for Maryland residents, or \$340.00 to \$370.00 for residents of other states and countries. A charge of \$400.00 is assessed to all students who are non-residents of the State of Maryland.

A matriculation fee of \$10.00 is charged all new students. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee.

*An Adventure in Learning*, the undergraduate catalog of the University, contains a detailed statement of fees and expenses and includes changes in fees as they occur. A copy may be requested from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park.

## AIR SCIENCE

All male students, unless specifically exempted under University rules, are required to take Basic Air Science training for a period of two semesters. The successful completion of this sequence is a prerequisite for graduation, and must be taken by all eligible students during the first two semesters of attendance at the University. Transfer students who do not have the required two semesters of Air Science training will be required to complete the sequence or take it until graduation, whichever occurs first. Selected students who wish to do so may carry Advanced Air Science courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning Air Science, refer to *University General and Academic Regulations*, a publication available to all undergraduate students.

## SCHOLARSHIPS AND GRANTS-IN-AID

A limited number of scholarships are available for agricultural students. These include awards granted by the Sears Roebuck Foundation, the Borden Company, Dr. Ernest N. Cory Trust Fund, the Danforth Foundation, the Ralston Purina Company, Southern States Cooperative, Inc., J. McKenny Willis and Sons, Dairy Technology Society of Maryland and District of Columbia, Miller Chemical and Fertilizer Corporation, Kroeger Company and Peninsula Horticultural Society.

These scholarships and grants-in-aid are awarded by the Faculty Committee in accordance with the terms of the respective grants. More detailed information about these awards is contained in the publication *An Adventure in Learning*.

## STUDENT ORGANIZATIONS

Students find opportunity for varied expression and growth in the several voluntary organizations sponsored by the College of Agriculture. These



## GENERAL INFORMATION

organizations are: Agricultural Economics Club, Agricultural Engineering Club, Block and Bridle Club, Collegiate 4-H Club, Dairy Science Club, Student Institute of Food Technology, Future Farmers of America, Agronomy Club, Poultry Science Club, and the Veterinary Science Club.

Alpha Zeta is a national agricultural honor fraternity. Members are chosen from students in the College of Agriculture who have met certain scholastic requirements and displayed leadership in agriculture.

The Agricultural Student Council is made up of representatives from the various student organizations in the College of Agriculture. Its purpose is to coordinate activities of these organizations and to promote work which is beneficial to the College.

## STUDENT JUDGING TEAMS

The College of Agriculture sponsors judging teams for dairy cattle, dairy products, horticultural products, livestock, meats and poultry. Team members are selected from students taking courses designed especially to train them for this purpose. Teams are entered in major contests where the students compete with teams from other state universities or agricultural colleges.

## FOR ADDITIONAL INFORMATION

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

## AWARDS, ACADEMIC INFORMATION

### AWARDS

#### ALPHA ZETA MEDAL

The honorary agricultural fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest average record in academic work. The presentation of the medal does not elect the student to the fraternity, but simply indicates recognition of high scholarship.

#### APPLEMAN-NORTON AWARD

This award is made annually to a senior for excellence in botany.

#### CARROLL E. COX AWARD

This cash award is made annually to the most outstanding graduate student in the Department of Botany.

#### NATIONAL BLOCK AND BRIDLE AWARD

The National Block and Bridle awards annually a plaque to the member of the Block and Bridle Club who has done the most for the local club during the year.

#### NATIONAL PLANT FOOD INSTITUTE AWARD

National Plant Food Institute awards annually the Agronomy Achievement Award to the outstanding junior or senior student in Agronomy. The amount of award is \$200.

#### VIRGINIA DARE AWARD

The Virginia Dare Extract Company awards annually a plaque and \$25.00 to the outstanding student in ice cream manufacturing with an overall good standing in dairy.

#### EDGAR P. WALLS AWARD

Dr. Edgar P. Walls awards annually a gold watch to the senior doing outstanding work in horticultural processing.

# ACADEMIC INFORMATION

## DEPARTMENTS AND CURRICULA

Departments in the College of Agriculture and their curricula are as follows: Agricultural Economics (including agricultural business); Agricultural and Extension Education; Agricultural Engineering; Agronomy (including crops and soils); Animal Science; Botany (plant morphology and taxonomy, plant pathology, and plant physiology and ecology); Dairy Science (dairy production and dairy technology); Entomology (including bee culture); Horticulture (pomology, olericulture, floriculture, ornamental horticulture and commercial processing); Poultry Science; Veterinary Science. In addition, there are curricula in Agricultural Chemistry and General Agriculture. Courses of study may also be arranged for any who desire to return to the farm after one or more years of training in practical agricultural subjects.

## ADMISSION

### *Fall Semester*

All applications for full-time undergraduate admission for the Fall Semester at the College Park Campus must be received by the University on or before July 15. Any student registering for nine (9) or more semester hours of work is considered a full-time student.

Under unusual circumstances, application will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$15.00 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10.00 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission must be received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

### *Spring Semester*

The deadline for the receipt of applications for the Spring Semester is January 1.

### *University College*

The application deadlines and fees *do not* apply to students registering in the evening classes offered by the University College.

## ACADEMIC INFORMATION

### *Graduate School*

Application for admission to the Graduate School must be made by September 1 for the fall term and by January 1 for the spring term on blanks obtained from the Office of the Graduate School. Admission to the summer session is governed by the date listed in the Summer School catalog. The summer session deadline date is generally June 1.

### *Entrance Requirements*

The high school or preparatory school student who intends to apply for admission to the University should plan his secondary school program carefully. He should select a program that will prepare him adequately to begin college work at the college level. He should allow for the fact that his interests may change by selecting a secondary school program that will enable him, when he enters the University, to have a maximum freedom of choice among the various curricula offered at the University.

Every candidate for admission to the University must normally present sixteen units of high school subjects. It is required that seven of the minimum sixteen units be in college preparatory subjects as follows:

English .....	4 units
Mathematics (preferably algebra) .....	1 unit
History or Social Sciences .....	1 unit
Biological or Physical Sciences .....	1 unit

The other units should be chosen to give the student as strong a preparation as possible for his work at the University. At least twelve of the units presented should be in college preparatory courses in academic subjects. Although there is no entrance requirement in foreign languages, two or more units are highly desirable for many programs and are suitable for all programs. Likewise it is desirable that each student offer two units in history or social sciences, and two units in the biological and physical sciences. It is strongly recommended that all students present a unit of plane geometry in addition to the one or two units of algebra.

It is recommended that the preparatory program in high school include:

English .....	4 units
Mathematics (college preparatory) .....	2 units
(Agricultural Engineering and Agricultural Chemistry—2 additional units)	
Biological and physical sciences .....	3 units
History or social sciences .....	2 units

Two units of foreign language are recommended for students in Agricultural Engineering, Agricultural Chemistry, Botany and Entomology.

Deviation from these recommendations is permitted, but should be undertaken only upon competent advice. An unwise selection of preparatory



courses can effectively prevent the student from pursuing certain curricula at the University or materially increase the time necessary to complete a particular curriculum. Every prospective applicant should be certain that his preparation in mathematics is adequate for any program he might conceivably wish to enter. A special fee will be charged for all remedial work in mathematics with the exception of the course in solid geometry.

A well-planned program of college preparatory work contributes much to the success of a student in his college work. This fact has an important bearing in estimating whether a candidate for admission is likely to be successful in his work at the University.

## JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time of computation shall be included; courses carrying "O" credit shall not be included; in every course only the most recent grade shall be counted; courses in the basic R.O.T.C., the physical education required of all University students, and the health courses required of all women students shall *not* be included, but courses in the advanced R.O.T.C. and courses in health or physical education which are taken as electives shall be included.

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

## REQUIREMENTS FOR GRADUATION

Each student must acquire a minimum of 120 semester hour credits in academic subjects other than basic air science and physical activities. Men must complete the required Basic Air Science and 4 hours in physical activities. Women must acquire in addition 4 hours in health, and 4 hours in physical activities.

## HONORS PROGRAM

The Honors Program of the College of Agriculture is made up of Departmental Honors Programs. The objective of the program is to recognize superior scholarship and to provide an opportunity for the excellent student to pursue more deeply those things which intrigue him or to partake more widely of those things which will add to his usefulness as a member of society. Honors Programs will be administered by Departmental Honors Committees and will be supervised by a College Committee on Honors Programs. All students in the College of Agriculture, who are in the top 20 percent of their class at the end of their first year, will automatically be considered for admission into the Honors Program. Of this group, no more than 50 percent will be admitted. Admission of

## ACADEMIC INFORMATION

students, who are sophomores or first semester juniors, will be considered upon application from any such student who stands in the upper 20 percent of his class. While application will be considered until the student enters his sixth semester, early participation in the program is highly preferable. Students admitted to the program enjoy some academic privileges. On the basis of the student's performance, during his participation in the Honors Program, the department may recommend the candidate for the appropriate degree without departmental honors, for the appropriate degree with (departmental) Honors, or for the appropriate degree with (departmental) High Honors. Successful completion of the Honors program will be recognized by a citation in the Commencement Program and by an appropriate entry on the student's record and diploma.

## STUDENT ADVISERS

Each student in the College of Agriculture is assigned to a faculty adviser, either departmental or general. Departmental advisers consist of heads of departments or persons selected by them to advise students with curricula in their respective departments. General advisers are selected for students who have no definite choice of curriculum in mind, or who wish to pursue the general curriculum in agriculture.

## ELECTIVES

The electives in the suggested curricula which follow affords opportunity for those who so desire to supplement major and minor fields of study or to add to their general education.

With the advice and consent of those in charge of his registration, a student may make such modifications in his curriculum as are deemed advisable to meet the requirements of his particular need.

## FIELD AND LABORATORY PRACTICE

The head of each department will help to make available opportunities for practical or technical experience along his major line of study for each student whose major is in that department and who is in need of such experience. For inexperienced students in many departments this need may be met by one or more summers spent on a farm.

## FRESHMAN YEAR

The program of the freshman year in the College of Agriculture is similar for all curricula of the College. Its purpose is to afford the student an opportunity to lay a broad foundation in subjects basic to agriculture and the related sciences, to articulate beginning work in college with that pursued in high or preparatory schools, to provide opportunity for wise choice of programs in succeeding years, and to make it possible for a

student before the end of the year to change from one curriculum to another, or from the College of Agriculture to a curriculum in some other college of the University with little or no loss of credit.

Students entering the freshman year with a definite choice of curriculum in mind are sent to departmental advisers for counsel as to the wisest selection of freshman electives from the standpoint of their special interests and their probable future programs. Students entering the freshman year with no definite curriculum in mind, are assigned to a general adviser, who assists with the choice of freshman electives and during the course of the year acquaints the students with opportunities in the upper curricula in the College of Agriculture and in the other divisions of the University. If by the close of the freshman year a student makes no definite choice of a specialized curriculum, he continues under the guidance of his general adviser in the General Agriculture curriculum.

# COURSES REQUIRED

## AGRICULTURE CURRICULUM

All students in the College of Agriculture are required to complete a series of courses to satisfy University requirements, College requirements and departmental requirements. The remaining courses needed to complete a program of study are elected by the student with the approval of his adviser.

	<i>Semester Credit Hours</i>
<b>UNIVERSITY REQUIREMENTS</b>	
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	6
G. & P. 1—American Government <sup>1</sup> .....	3
Soc. 1—Sociology of American Life or alternate <sup>1</sup> .....	3
Eng. 3, 4—Composition and World Literature or	
Eng. 5, 6—Composition and English Literature.....	6
H. 5, 6—History of American Civilization <sup>1</sup> .....	6
<b>FOR MEN:</b>	
Basic Air Science.....	4
Physical Activities .....	4
<b>FOR WOMEN:</b>	
Hea. 2—Personal Health .....	2
Hea. 5—Community Health .....	2
Physical Activities .....	4

### COLLEGE OF AGRICULTURE REQUIREMENTS

Chem. 1, 3—General Chemistry .....	8
Speech 7—Public Speaking.....	2
Agr. 1—Introduction to Agriculture.....	1

#### ELECT TWO OF THE FOLLOWING:

- Bot. 1—General Botany (4)
- Zool. 1—General Zoology (4)
- Microb. 1—General Microbiology (4)
- Students failing to pass the pre-registration test in mathematics will be required to take Math. 1. (Special fee, \$30.00)
- Students expecting to pursue the curriculum in either Agricultural Chemistry or Agricultural Engineering should, if qualified, take Math. 18 or 19. If not qualified they should take Math. 1.

<b>DEPARTMENTAL REQUIREMENTS .....</b>	<b>77</b>
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Required courses are determined by the department for each specific curriculum and elective courses are approved by the adviser of the student's program.

A program of courses for the freshman year is essentially the same for all students. However, there are some variations in several curricula.

<sup>1</sup> For classification tests and alternate courses, see Program in American Civilization section published in *University General and Academic Regulations*.



## GENERAL AGRICULTURE CURRICULUM

FRESHMAN YEAR	Semester	
	I	II
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government.....	3	..
Soc. 1—Sociology of American Life or alternate.....	..	3
Agr. 1—Introduction to Agriculture.....	1	..
Bot. 1—General Botany .....	4	..
Zool. 1—General Zoology.....	..	4
An. Sc. 1—Principles of Animal Science.....	..	3
Agron. 1—Crop Production .....	..	3
A. S. 2, 3—Basic Air Science (men).....	2	2
Physical Activities (men and women).....	1	1
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2

## AGRICULTURE—GENERAL

The general agricultural curriculum provides for the development of a broad understanding in agriculture.

The flexibility of this curriculum permits selection of electives that will meet individual vocational plans in agriculture and agriculturally related business and industry.

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

GENERAL AGRICULTURAL REQUIREMENTS	Semester	
	Credit	Hours
A. E. 107—Financial Analysis of the Farm Business.....	3	
A. E. 108—Farm Management .....	3	
R. Ed. 114—Rural Life and Education.....	3	
Agr. Engr. 56—Introduction to Farm Mechanics.....	2	
Agr. Engr. 1—Introduction to Agricultural Engineering.....	4	
Agron. 10—General Soils .....	4	
Agron. 107—Cereal Crop Production .....	3	
Agron. 108—Forage Crop Production.....	3	
Agron. 151—Cropping Systems .....	2	
An. Sc. 1—Principles of Animal Science.....	3	
An. Sc. 10—Feeds and Feeding.....	3	
Bot. 20—Diseases of Plants.....	4	
An. Sc. 40—Dairy Production.....	3	
Ent. 20—Insect Pests of Agricultural Crops.....	4	
Hort. 5 or 58—General Horticulture.....	3	
An. Sc. 62—Commercial Poultry Management.....	3	
Elect either of the following pairs of courses:		
Science Sequence .....	8	
B. A. 20, 21—Principles of Accounting.....	6	
Electives .....	20-22	

## AGRICULTURAL ECONOMICS

## AGRICULTURAL CHEMISTRY

This curriculum insures adequate instruction in the fundamentals of both the physical and biological sciences. It may be adjusted through the selection of electives to fit the student for work in agricultural experiment stations, soil bureaus, geological surveys, food laboratories, fertilizer industries and those handling food products.

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

AGRICULTURAL CHEMISTRY REQUIREMENTS		Semester Credit Hours
Chem. 15—Qualitative Analysis .....		4
Chem. 21—Quantitative Analysis .....		4
Chem. 35—Elementary Organic Lecture .....		2
Chem. 36—Elementary Organic Laboratory.....		2
Chem. 37—Elementary Organic Lecture.....		2
Chem. 38—Elementary Organic Laboratory.....		2
Chem. 123—Advanced Quantitative Analysis.....		4
Agron. 10—General Soils .....		4
Bot. 1—General Botany .....		4
Geol. 1—Geology .....		2
Math. 20—Calculus I .....		4
Math. 21—Calculus II .....		4
Modern Languages .....		12
Phys. 20—General Physics .....		5
Phys. 21—General Physics .....		5
Speech 7—Public Speaking .....		2
Zool. 1—General Zoology .....		4
Electives in Biology .....		6
Electives in Agricultural Chemistry.....		14

## AGRICULTURAL ECONOMICS

This curriculum combines training in the business, economic, and international aspects of agricultural production and marketing with the biological and physical sciences basic to agriculture. Programs are available for students in agricultural economics, agricultural business and in the area of international agriculture. Students desiring to enter agricultural marketing or businesses affiliated with agriculture may elect the agricultural business option, and students interested in foreign service may elect the international agriculture option. Students interested primarily in the broad aspects of production and management as it relates to the operation of a farm business may elect the agricultural economics option. In these programs, students are trained for employment in agricultural business and industry, for positions in sales or management, with local, state, or

federal agencies, extension workers, college teachers, researchers, farm operators or farm managers.

Courses for the freshman and sophomore years are essentially the same for all students. In the junior year the student elects the agricultural economics, agricultural business or international agricultural option according of his particular interest. Courses in this Department are designed to provide training in the application of economic principles to the production, processing, distribution, and merchandising of agricultural products as well as the inter-relationship of business and industry associated with agriculture in a dynamic economy. The curriculum includes courses in general agricultural economics, marketing, farm management, prices, land economics, agricultural policy, and international agricultural economics.

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

REQUIRED OF ALL STUDENTS	Semester
	Credit Hours
A. E. 50—Elements of Agricultural Economics.....	3
A. E. 51—Marketing of Agricultural Products.....	3
A. E. 106—Prices of Agricultural Products.....	3
A. E. 108—Farm Management .....	3
A. E. 112—Agricultural Policy and Programs.....	3
A. E. 114—World Agricultural Production and Trade.....	3
A. E. 199—Seminar .....	1
Econ. 31, 32—Principles of Economics.....	3 <sup>1</sup>
Math. 10 or equivalent—Introduction to Mathematics.....	3
Agron. 1—Crop Production .....	3
Agron. 10—General Soils .....	4
B. A. 130—Elements of Business Statistics I.....	3
An. Sci. 10—Feeds and Feeding.....	3

Select in consultation with adviser at least 21 credit hours in option chosen of which a minimum of six credit hours must be in Agricultural Economics and/or Economics.

#### AGRICULTURAL ECONOMICS OPTION

A. E. 107—Financial Analysis of the Farm Business.....	3
A. E. 111—Economics of Resource Development.....	3
Econ. 130—Mathematical Economics .....	3
Econ. 131—Comparative Economic Systems.....	3
Econ. 132—Advanced Economic Principles .....	3
Econ. 140—Money and Banking.....	3
Agr. Engr. 1—Introduction to Agricultural Engineering.....	4
An. Sci. 1—Principles of Animal Science.....	3
Geog. 10—General Geography .....	3
Soc. 113—The Rural Community.....	3
Math. 11—Introduction to Mathematics.....	3
Electives .....	18

<sup>1</sup> Econ. 31 is being substituted for Soc. 1 under University requirements.

## CURRICULUM OPTIONS

*Semester  
Credit Hours*

### AGRICULTURAL BUSINESS OPTION

A. E. 115, A. E. 116, A. E. 117, or A. E. 150—Commodity Marketing .....	2
A. E. 103—Economics of Agricultural Cooperation.....	3
A. E. 104—Economics of Agricultural Transportation.....	3
A. E. 119—Foreign Agricultural Economies.....	3
Econ. 132—Advanced Economic Principles.....	3
Econ. 140—Money and Banking.....	3
B. A. 20, 21—Principles of Accounting.....	6
B. A. 131—Elements of Business Statistics II.....	3
B. A. 140—Business Finance .....	3
B. A. 150—Marketing Management .....	3
B. A. 151—Advertising .....	3
B. A. 180—Business Law .....	3
Geog. 10—General Geography .....	3
Math. 11—Introduction to Mathematics.....	3
One course in Technology of Marketing (Animal Science or Horticulture)	
Electives .....	18

### INTERNATIONAL AGRICULTURE OPTION

A. E. 111—Economics of Resource Development.....	3
A. E. 118—Agriculture in World Economic Development....	3
A. E. 119—Foreign Agricultural Economies.....	3
Econ. 130—Mathematical Economics .....	3
Econ. 131—Comparative Economic Systems.....	3
Econ. 132—Advanced Economic Principles .....	3
Econ. 140—Money and Banking.....	3
Foreign Language .....	6
Math. 11—Introduction to Mathematics.....	3
Geog. 10—General Geography .....	3
Geog. 41—Introductory Climatology .....	3
Bot. 20—Diseases of Plants.....	4
Bot. 117—General Plant Genetics.....	2
Agr. Engr. 1—Introduction to Agricultural Engineering.....	4
Ent. 1—Introductory Entomology.....	3
Geol. 1—Geology .....	3
Electives .....	17

## AGRICULTURAL & EXTENSION EDUCATION

This Department combines a broad general training in agriculture with basic work in the natural sciences, the social sciences and the humanities.

Programs are available for students in agricultural education and agricultural extension. The agricultural education curriculum is designed primarily for persons who wish to prepare for teaching agriculture in



## AGRICULTURAL AND EXTENSION EDUCATION

secondary schools. The agricultural extension curriculum is designed primarily for persons who desire to prepare to enter the Cooperative Extension Service. Through careful planning, students may complete both the agricultural education and agricultural extension options in a four-year period. By taking six semester hours of physics, agricultural education majors may also qualify for certification to teach general science in the public schools of Maryland. Either option may lead to a variety of other educational career opportunities in agricultural business and industry, public service, the communications industry, to research and college teaching. Students interested in rural ministry often select this curriculum.

In addition to the regular entrance requirements of the University, involving graduation from a standard four-year high school, students electing either curriculum must present evidence of having acquired adequate farm experience after reaching the age of fourteen years.

In order to be admitted to student teaching or to extension field experience, each of which normally is taken in the senior year, a student must have a 2.3 grade point average or higher.

Students in the agricultural education curriculum are expected to participate in the Collegiate Chapter of the Future Farmers of America in order to gain needed training to serve as advisers of high school chapters of the FFA upon graduation.

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

### REQUIRED OF BOTH OPTIONS

	<i>Semester Credit Hours</i>
An. Sc. 1—Principles of Animal Science .....	3
Agron. 1—Crop Production, or	
Agron. 108—Forage Crop Production .....	3
Agron. 10—General Soils .....	4
Hort. 58—Vegetable Production .....	3
Ag. Engr. 1—Introduction to Agricultural Engineering .....	4
Ag. Engr. 56—Introduction to Farm Mechanics .....	2
Ag. Econ. 107—Financial Analysis of the Farm Business .....	3
Ag. Econ. 108—Farm Management .....	3
Ent. 20—Insect Pests of Agricultural Crops .....	4
Bot. 20—Diseases of Plants .....	4
An. Sc. 10—Feeds and Feeding .....	3
H. D. Ed. 100, 101—Principles of Human Development, I and II	
or Psych. 1—Introduction to Psychology	
and Psych. 110—Educational Psychology .....	6
R. Ed. 101—Teaching Materials and Demonstrations .....	2
R. Ed. 114—Rural Life and Education .....	3

# AGRICULTURAL ENGINEERING

## AGRICULTURAL EDUCATION OPTION

R. Ed. 107—Observation and Analysis of Teaching Agriculture	3
R. Ed. 103—Student Teaching	5
R. Ed. 104—Student Teaching	1-4
R. Ed. 109—Teaching Secondary Vocational Agriculture	3
R. Ed. 111—Teaching Young and Adult Farmer Groups	1
R. Ed. 112—Departmental Management	1
Ag. Engr. 104—Farm Mechanics	2
Approved electives	11-14

## AGRICULTURAL EXTENSION OPTION

R. Ed. 150—Extension Education	2
R. Ed. 160—Extension Communications	2
R. Ed. 161—4-H Organization and Procedure	2
R. Ed. 121—Directed Experience in Extension Education	1-5
Psych. 21—Social Psychology	3
B. A. 166—Business Communications	3
Approved electives	13-17

# AGRICULTURAL ENGINEERING

This Department offers an educational program in agricultural engineering technology for students in the College of Agriculture. These subjects may be grouped under five general classifications, farm power and machinery, farm structures, soil and water conservation engineering, farm electrification, and mechanics and equipment for agricultural materials handling and processing. The technological aspects covered in these courses are designed to complement the education received by students in other departments of the College of Agriculture.

Agricultural engineering, in the broadest sense, is the science of combining forces and materials of nature for the benefit of agriculture; as implied, an understanding of soil, plant, and animal sciences is the basis for intelligent applications of engineering principles in all phases of the agricultural industry. Because interrelated applications of all branches of engineering are found in agriculture, or even on a single, diversified farm, education for the profession is necessarily founded on a broad base of mathematical, physical and engineering science complemented by basic agricultural sciences. Although boundaries between generally recognized fields of engineering overlap in agricultural applications, the scope of the field together with personal preference generally leads to specialization in one of the four major areas of the profession.

The field of farm power and machinery offers opportunities to agricultural engineers specifically interested in agricultural mechanization. The farm equipment industry employs many graduates who conceive, design, de-

velop, and test new power units and machines. Others are employed in distribution: sales, sales promotion or service.

Electric power and processing is concerned with productive applications of electricity in farm production and in other phases of the agricultural industry. Electricity is used not only for light and power but also for heating and cooling processes and for automatic control and operation of equipment. Agricultural engineers with such interests are employed by electric power suppliers and crop processing organizations.

Farm structures specialists are interested in farm buildings for structural design and functional use. Environmental requirements of animal shelters, crop storage and processing structures include control of temperature, humidity, and air movement for efficient utilization. Design must accommodate heat and moisture of respiration from animal or vegetable origin. Manufacturers and fabricators of structural units and facilities employ agricultural engineers for research and educational programs to promote their products.

Agricultural engineers specializing in soil and water control and conservation utilize hydraulics in irrigation, drainage, and soil erosion. Knowledge of how water flows over or through soil or infiltrates into soil are the tools of the engineer, but use of these tools is influenced by soil-moisture-plant relationships.

Farm management companies employ engineers to design soil and water conservation and other engineering systems for farms under their supervision or for individual farmers. Other sources of employment include contracting, farm management, irrigation equipment design or sales and service, and related enterprises.

State and federal institutions and agencies conduct programs of education and research in all areas of agricultural engineering. Research findings are frequently established in the agricultural industry through programs of action agencies such as the Agricultural Extension Service or the Soil Conservation Service. The agencies offer many opportunities for work in the field.

*University Requirements (see page 12)*

AGRICULTURAL ENGINEERING

FRESHMAN YEAR	Semester	
	I	II
Agr. 1—Introduction to Agriculture	1	..
Agr. Engr. 1—Introduction to Agricultural Engineering	4	..
An. Sc. 1—Principles of Animal Science	3	..
Chem. 1—General Chemistry	..	4
E. S. 1—Engineering Graphics	..	3
Eng. 1, 2—Composition and American Literature	3	3
Math. 19—Elementary Analysis <sup>1</sup>	4	..
Math. 20—Calculus I	..	4
A. S. 2, 3—Basic Air Science	2	2
Physical Activities	1	1
Total	18	17

AGRICULTURAL SCIENCES

Agr. 1—Introduction to Agriculture	1
Agron. 1—Crop Production	3
Agron. 10—General Soils	4
An. Sc. 1—Principles of Animal Science	3
Agron. 117—Soil Physics (optional)	(3)

AGRICULTURAL ENGINEERING

Agr. Engr. 1—Introduction to Agricultural Engineering	4
Agr. Engr. 86—Agricultural Engineering Shop Techniques	1
Agr. Engr. 143—Agricultural Power and Machinery Analysis	4
Agr. Engr. 144—Design of Operational Systems for Agriculture	3
Agr. Engr. 145—Soil and Water Conservation Engineering	2
Agr. Engr. 189—Senior Problem	2

BASIC SCIENCES

Chem. 1, 3—General Chemistry	8
Math. 19—Elementary Analysis <sup>1</sup>	4
Math. 20, 21, 22—Calculus I, II, III	12
Math. 64—Differential Equations for Engineers	3
Phys. 20, 21—General Physics	10

ENGINEERING SCIENCES

REQUIRED

E. S. 1—Engineering Graphics	4
E. S. 10—Introductory Mechanics	4
E. S. 20—Mechanics of Materials	3
E. S. 21—Dynamics	4
C. E. 110—Surveying I	3
C. E. 102 or M. E. 102—Fluid Mechanics	3
E. E. 51, 52—Principles of Electrical Engineering	8
M. E. 1—Thermodynamics	3

<sup>1</sup> A qualifying test is given during registration to determine whether the student is adequately prepared for Math. 19. A student failing this test is required to take Math. 1, Review of High School Algebra or Math. 18, Introductory Analysis, without credit. (Special Fee, \$30.00)



## AGRONOMY—CROPS AND SOILS

### TECHNICAL ELECTIVES

Students will select Series A, B, or C.

#### SERIES A

C. E. 30—Materials of Engineering .....	3
C. E. 160, 161—Structural Design .....	8
C. E. 162, 163—Structural Analysis .....	6

Note: Student selecting Series A to take Agron. 117.

#### SERIES B

C. E. 160—Structural Design .....	4
M. E. 101—Dynamics of Machines .....	2
M. E. 103—Materials Engineering .....	3
M. E. 106—Transfer Processes .....	3
Approved Electives .....	6

#### SERIES C

C. E. 160—Structural Design .....	4
E. E. 101—Engineering Electronics .....	4
E. E. 114—Applied Electronics .....	3
E. E. 118—Electrical Energy Conversion .....	4
Approved Electives .....	5

Note: Student selecting Series C will take E. E. 1 and 100 in lieu of E. E. 51, 52.

## AGRONOMY—CROPS AND SOILS

The Department of Agronomy offers instruction in production and breeding of forage crops, cereal crops, and tobacco; weed control; soil chemistry; soil fertility; soil physics; soil classification; and soil conservation. A technical or a general curriculum may be elected by a student in either crops or soils. A soil conservation option is available in the general soils curriculum. The technical curricula provide training in basic courses which will increase the student's understanding of the applied crops and soils courses. Training in these basic courses is required for advanced work in agronomy and is desired by many employers of students graduating in agronomy.

General curricula in crops and soils permit the student to confine his training to applied courses but students following these curricula are encouraged to elect some of the basic courses included in the technical curricula.

Depending on the electives chosen, students graduating in agronomy are well prepared for advanced study, trained for general farming, farm management, specialized seed production, extension work, soil conservation, or employment with commercial seed, fertilizer, chemical or farm equipment companies. Additional information on opportunities in agronomy may be obtained by writing to the Department of Agronomy.

AGRONOMY—CROPS AND SOILS

CROPS

University Requirements (see page 12)

College of Agriculture Requirements (see page 12)

DEPARTMENT OF AGRONOMY REQUIREMENTS	Semester Credit Hours
Agron. 10—General Soils .....	4
Agron. 103—Crop Breeding .....	2
Agron. 107—Cereal Crop Production .....	3
Agron. 108—Forage Crop Production .....	3
Agron. 151—Cropping Systems .....	2
Agron. 154—Weed Control .....	3
Agron. —Advanced Soils Courses .....	6
Bot. 11—Plant Taxonomy .....	3
Bot. 20—Diseases of Plants .....	4
Bot. 101—Plant Physiology .....	4
Bot. 117—General Plant Genetics or	
Zool. 6—Genetics .....	2 or 4
Technical and General Courses for Crops Students (see explanation and lists below) .....	30
Electives .....	11

TECHNICAL CROPS CURRICULUM

A minimum of 20 of the 30 hours of technical and general courses required above must be selected from the technical courses, if the student desires to take more than 30 hours of technical courses they can be used as part of his 12 hours of electives or they can be substituted for other Department of Agronomy requirements with permission of the crops adviser.

GENERAL CROPS CURRICULUM

Same as Technical Crops Curriculum except that the 20-hour minimum of courses from the technical group does not apply.

TECHNICAL COURSES WHICH MAY BE SELECTED BY THE CROPS STUDENT	Semester Credit Hours
Math. 10, 11—Introduction to Mathematics .....	3, 3
Math. 18—Introductory Analysis .....	3
Math. 19—Elementary Analysis .....	4
Math. 20, 21, 22—Calculus .....	4, 4, 4
Chem. 15—Qualitative Analysis .....	4
Chem. 19—Elements of Quantitative Analysis .....	4
Chem. 31—Elements of Organic Chemistry .....	3
Chem. 33—Elements of Organic Chemistry .....	3
Phys. 10, 11—Fundamentals of Physics .....	4, 4
Bot. 10—Principles of Conservation .....	3
Bot. 102—Plant Ecology .....	2
Bot. 103—Plant Ecology Lab. ....	1
Bot. 111—Plant Anatomy .....	3
Agr. 100— Introductory Agricultural Biometrics .....	3

## AGRONOMY—CROPS AND SOILS

*Semester  
Credit Hours*

### GENERAL COURSES WHICH MAY BE SELECTED BY THE CROPS STUDENT

An. Sc. 1—Principles of Animal Science .....	3
An. Sc. 10—Feeds and Feeding .....	3
A. E. 50—Economics of Agriculture .....	3
A. E. 108—Farm Management .....	3
Agr. Eng. 1—Introduction to Agricultural Engineering .....	4
Ent. 1—Introductory Entomology .....	3
Ent. 20—Insect Pests of Agriculture Crops .....	4
Zool. 1—General Zoology .....	4
Geog. 40—Principles of Meteorology .....	3
Geog. 41—Introductory Climatology .....	3
Hort. 5—Fruit Production .....	3
Hort. 58—Vegetable Production .....	3
Agron.—Soils or crops courses not previously required .....	10

## SOILS

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

### DEPARTMENT OF AGRONOMY REQUIREMENTS

*Semester  
Credit Hours*

Agron. 10—General Soils .....	4
Agron. 107—Cereal Crop Production .....	3
Agron. 108—Forage Crop Production .....	3
Agron. 114—Soil Classification and Geography .....	4
Agron. 116—Soil Chemistry .....	3
Agron. 117—Soil Physics .....	3
Agron.—Additional Advanced Soils courses .....	6
Bot. 101—Plant Physiology .....	4
Technical and general courses for soils students (see explanation and lists below) .....	35
Electives .....	12

## TECHNICAL SOILS CURRICULUM

A minimum of 30 of the 35 semester hours of technical and general courses required above must be selected from the technical group. If the student desires to take more than 35 semester hours of technical courses they can be used as part of his 12 hours of electives or they can be substituted for other Department of Agronomy requirements with permission of the soils adviser.

## GENERAL SOILS AND SOIL CONSERVATION CURRICULA

Same as Technical Soils Curriculum except that the 30-hour minimum of courses from the technical group does not apply. Students in soil conservation must elect Agron. 113—Soil Conservation, Geol. 1—Geology, and Bot. 10—Principles of Conservation.

## ANIMAL SCIENCE

### TECHNICAL COURSES WHICH MAY BE SELECTED BY THE SOILS STUDENT

### *Semester Credit Hours*

Math. 10, 11—Introduction to Mathematics.....	3, 3
Math. 14, 15—Elementary Calculus .....	3, 3
Math. 18—Introductory Analysis .....	3
Math. 19—Elementary Analysis .....	4
Math. 20, 21, 22—Calculus .....	4, 4, 4
Math. 66—Differential Equations for Scientists and Engineers..	3
Chem. 15—Qualitative Analysis .....	4
Chem. 19—Quantitative Analysis .....	4
Chem. 35, 37—Elementary Organic Chemistry.....	2, 2
Chem. 36, 38—Elementary Organic Laboratory .....	2, 2
Phys. 10, 11—Fundamentals of Physics or.....	4, 4
Phys. 20, 21—General Physics .....	5, 5
Agr. 100—Introductory Agricultural Biometrics.....	3

### GENERAL COURSES WHICH MAY BE SELECTED BY THE SOILS STUDENT

An. Sc. 1—Principles of Animal Science.....	3
An. Sc. 10—Feeds and Feeding .....	3
A. E. 50—Elements of Agricultural Economics.....	3
A. E. 108—Farm Management.....	3
Agr. Engr. 1—Introduction to Agricultural Engineering.....	4
Agr. Engr. 56—Introduction to Farm Mechanics.....	2
Zool. 1—General Zoology .....	4
Zool. 6—Genetics .....	4
Bot. 10—Principles of Conservation.....	3
Bot. 11—Plant Taxonomy .....	3
Bot. 20—Diseases of Plants.....	4
Bot. 102—Plant Ecology .....	2
Bot. 103—Plant Ecology Laboratory .....	1
Bot. 117—General Plant Genetics.....	2
Ent. 1—Introductory Entomology .....	3
Ent. 20—Insect Pests of Agricultural Crops.....	4
Geog. 40—Principles of Meteorology.....	3
Geog. 41—Introductory Climatology .....	3
Geol. 1—Geology .....	3
Geol. 2—Historical and Stratigraphic Geology.....	3
Hort. 5—Fruit Production .....	3
Hort. 58—Vegetable Production .....	3
Agron.—Any advanced agronomy courses not previously required .....	10

## ANIMAL SCIENCE

The curriculum in animal science offers a broad background in general education, basic sciences, agricultural sciences and the opportunity for a student to emphasize that phase of animal agriculture in which he is specifically interested. Each student will be assigned to an adviser according to the program he plans to pursue.



## OBJECTIVES

In addition to fulfilling the requirements of the University and the College of Agriculture, the following specific objectives have been established for the program in animal science:

1. To acquaint students with the role of animal agriculture in our cultural heritage.
2. To prepare students for careers in the field of animal agriculture. These include positions of management and technology associated with animal, dairy, or poultry production enterprises, positions with marketing and processing organizations, as well as in other allied fields such as feed, agricultural chemicals and equipment.
3. To prepare students for entrance to veterinary schools.
4. To prepare students for graduate study and subsequent careers in teaching, research and extension, both public and private.
5. To provide essential courses for the support of other academic programs of the University.

## DEPARTMENTAL REQUIREMENTS

*Required Courses**Semester  
Credit Hours*

An. Sc. 1—Principles of Animal Science.....	3
An. Sc. 5—Introduction to Food Science.....	3
An. Sc. 15—Fundamentals of Nutrition.....	3
An. Sc. 116—Anatomy of Domestic Animals.....	3
An. Sc. 117—Introduction to Diseases of Animals.....	3
Zool. 102—General Animal Physiology.....	4
Genetics .....	3
Agronomy .....	3
Agricultural Engineering .....	4
Insect Pests of Agriculture.....	4
Economics .....	3
Organic Chemistry .....	3
Physics .....	3
Math. and/or Biometrics .....	6
Electives .....	29

BOTANY

BOTANY

The Department offers three major fields of work: plant morphology, cytology, cytogenetics and taxonomy; plant pathology; and plant physiology and ecology. The required courses for the freshman and sophomore years are the same for all students. In the junior and senior years, the student elects botany courses to suit his particular interest. Courses are required in other subjects to contribute toward a broad cultural education, and to support the courses selected in the chosen field of botany.

The curriculum as outlined, provides a complete survey of the field of botany for prospective high school teachers, and lays a good foundation for graduate work in botany in preparation for college teaching and for research in state or federal experiment stations, or in private research laboratories.

Students are also afforded an opportunity for training for other vocations involving various botanical applications, such as extension work, and positions with seed companies, canning companies and other commercial concerns.

Students who wish to meet the requirements for certificates in secondary education may elect basic courses in education. An additional semester will usually be necessary to take certain courses in education, including the required practice teaching. As long as the demand continues, a series of advanced courses will be offered in rotation in the summer session especially for teachers working toward the degree Master of Education in science teaching.

The Department of Botany has instituted an Honors Program which a student may enter if he desires and if he meets the requirements of the program.

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

DEPARTMENT OF BOTANY REQUIREMENTS		Semester Credit Hours
Bot. 2—General Botany .....		4
Bot. 11—Plant Taxonomy .....		3
Bot. 20—Diseases of Plants.....		4
Bot. 101—Plant Physiology .....		4
Bot. 102—Plant Ecology .....		3
Bot. 103—Plant Ecology Laboratory .....		1
Bot. 111—Plant Anatomy .....		3
Bot. 117—General Plant Genetics.....		2
Bot. 199—Seminar .....		2
Modern Language, preferably German.....		12
Math. 10, 11 .....		6
Microb. 1—General Microbiology .....		4
Zool. 1—General Zoology .....		4
Phys. 10, 11—Fundamentals of Physics.....		8
Botany electives or related courses.....		10
Electives .....		12

The major student, with the approval of his advisor, will elect additional courses in Botany and related subjects to provide the best possible basic training and preparation in the area of his special interest. Students contemplating graduate work are strongly advised to take Calculus, Math. 14, 15 and Organic Chemistry, Chem. 31, 33 as a part of their undergraduate program.

## CONSERVATION AND RESOURCE DEVELOPMENT

The development and use of natural resources (including water, soil, minerals, fresh water and marine organisms, wildlife, air and human resources), are essential to the full growth of an economy.

The curriculum in Conservation and Resource Development (administered by the Botany Department), is designed to instill concepts of the efficient development and judicious use of natural resources. The study of the problems associated with the use of natural resources will acquaint students with their role in economic development, cultural heritage, and their necessary consideration in future expansion.

Students will prepare for professional and administrative positions in land and water conservation projects, for careers in operational, administrative, educational and research work in land use, rural area development, water resources, recreational area development and management, or for graduate study in any of several areas within the biological sciences.

Students will pursue a broad education program and then elect subjects concentrated in a specific area of interest. A student will be assigned an adviser according to his area of interest.

Students will be encouraged to obtain summer positions which will give them technical laboratory or field experience in their chosen interest area.

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

CONSERVATION AND RESOURCE DEVELOPMENT REQUIREMENTS	Semester Credit Hours
Agr. 100—Agricultural Biometrics .....	3
Agr. Engr. 1—Introduction to Agricultural Engineering .....	4
Agron. 10—General Soils .....	4
Bot. 2—General Botany .....	4
Bot. 10—Principles of Conservation .....	3
Bot. 11—Plant Taxonomy (or Bot. 153) .....	3(2)
Bot. 102—Plant Ecology .....	2
Bot. 103—Plant Ecology Laboratory .....	1
Ent. 1—Introductory Entomology .....	3
Geog. 10—General Geography .....	3

## ENTOMOLOGY CURRICULUM

	<i>Semester Credit Hours</i>
Geol. 1—Geology .....	3
*Math. 10, 11—Introduction to Mathematics.....	3, 3
Micro. 1—General Microbiology .....	4
Zool. 2—Animal Phyla .....	4
Zool. 121—Principles of Animal Ecology.....	3
Electives .....	27

## ENTOMOLOGY

This curriculum prepares students for work in various types of entomological positions. Professional entomologists are engaged in fundamental and applied research, regulatory and control services with state and federal agencies, commercial pest control, sales and developmental programs with chemical companies and other commercial organizations, consulting work, extension work, and teaching.

A student wishing an undergraduate minor in entomology should take the introductory course (Ent. 1) and after consultation with the heads of both the major and minor departments will select courses that will contribute most to the end he has in view.

Most of the first two years of this curriculum is devoted to obtaining the essential background. In the junior and senior year there is opportunity for some specializing.

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

### DEPARTMENT OF ENTOMOLOGY REQUIREMENTS

	<i>Semester Credit Hours</i>
Ent. 1—Introductory Entomology .....	3
Ent. 20—Insect Pests of Agricultural Crops.....	4
Ent. 105—Medical Entomology .....	3
Ent. 120—Insect Taxonomy and Biology .....	4
Ent. 198—Special Problems .....	2
Ent. 199—Seminar .....	2
Bot. 11—Plant Taxonomy .....	3
Bot. 20—Diseases of Plants.....	4
Microb. 1—General Microbiology .....	4
Elect 30 semester credits from the following:	
An. Sc. 1—Principles of Animal Science.....	3
Agr. 100—Introductory Agri. Biometrics.....	3
Agr. Engr. 1—Agricultural Engineering .....	3
Agron. 1—Crop Production .....	3
Agron. 10—General Soils .....	4
Bot. 117—General Plant Genetics.....	3

\*If qualifying or entrance examination in Mathematics permits, student may substitute Math. 18 and 19 for Math. 10 and 11.



## HORTICULTURE CURRICULA

	<i>Semester Credit Hours</i>
Chem. 31—Elements of Organic Chemistry.....	3
Chem. 33—Elements of Organic Chemistry.....	3
An. Sc. 40—Dairy Production .....	3
French 1, 2—Elementary French.....	6
German 1, 2—Elementary German.....	6
Math. 10, 11—Introduction to Mathematics.....	3, 3
Phys. 1—Elements of Physics .....	3
Phys. 2—Elements of Physics .....	3
Zool. 104—Genetics .....	3
Electives .....	18

## HORTICULTURE

The Department of Horticulture offers instruction in pomology (fruits), olericulture (vegetables), floriculture (flowers), and ornamental horticulture, and processing of horticultural crops. These courses prepare students to enter commercial production and the horticultural industries such as fruit and vegetable processing and seed production. Students are likewise prepared to enter the allied industries as horticultural workers with fertilizer companies, equipment manufacturers, and other. Students who wish to enter specialized fields of research and teaching may take advanced work in the Department.

### POMOLOGY AND OLERICULTURE CURRICULUM

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

#### DEPARTMENT OF HORTICULTURE REQUIREMENTS

	<i>Semester Credit Hours</i>
Hort. 5, 6—Tree Fruit Production.....	3, 2
Hort. 58—Vegetable Production .....	3
Hort. 59—Berry Production .....	3
Hort. 62—Plant Propagation .....	3
Hort. 101—Technology of Fruits.....	3
Hort. 103—Technology of Vegetables .....	3
Hort. 161—Physiology of Maturation and Storage of Horticultural Crops .....	2
Hort. 199—Seminar .....	1
Bot. 20—Diseases of Plants.....	4
Bot. 101—Plant Physiology .....	4
Bot. 117—General Plant Genetics.....	2
Agron. 10—General Soils .....	4
Ent. 20—Insect Pests of Agricultural Crops.....	4
Elect one of the following courses:	
Bot. 125—Diseases of Fruit Crops (2)	
Bot. 126—Diseases of Vegetable Crops (2)	
A minimum of 3 additional Horticultural credits.....	3
Electives .....	31

## HORTICULTURE CURRICULA

### FLORICULTURE AND ORNAMENTAL HORTICULTURE CURRICULUM

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

DEPARTMENT OF HORTICULTURE REQUIREMENTS	Semester Credit Hours
Hort. 11—Greenhouse Management .....	3
Hort. 16—Garden Management .....	3
Hort. 22—Landscape Gardening .....	2
Hort. 56—Elements of Landscape Design .....	2
Hort. 62—Plant Propagation .....	3
Hort. 105—Technology of Ornamentals .....	2
Hort. 107, 108—Woody Plant Materials .....	3, 3
Hort. 150, 151—Commercial Floriculture .....	3, 3
Hort. 152, 153—Landscape Design .....	3, 3
Hort. 199—Seminar .....	1
Bot. 11—Plant Taxonomy .....	3
Bot. 20—Diseases of Plants .....	4
Bot. 101—Plant Physiology .....	4
Bot. 117—General Plant Genetics .....	2
Bot. 123—Diseases of Ornamental Crops .....	2
Agron. 10—General Soils .....	4
Ent. 116—Insect Pests of Ornamental and Greenhouse Plants ..	3
Electives .....	21

### PROCESSING OF HORTICULTURAL CROPS CURRICULUM

*University Requirements (see page 12)*

*College of Agriculture Requirements (see page 12)*

DEPARTMENT OF HORTICULTURE REQUIREMENTS	Semester Credit Hours
Hort. 58—Vegetable Production .....	3
Hort. 61—Introduction to Fruit and Vegetable Processing .....	1
Hort. 101—Technology of Fruits or .....	
Hort. 103—Technology of Vegetables .....	3
Hort. 123—Quality Control .....	3
Hort. 124—Quality Control Systems .....	3
Hort. 155, 156—Fundamentals of Fruit and Vegetable Process- ing .....	3, 3
Hort. 161—Physiology of Maturation and Storage of Horticul- tural Crops .....	2
Hort. 199—Seminar .....	1
Bot. 101—Plant Physiology .....	4
Chem. 19—Quantitative Analysis .....	4
Chem. 31—Elements of Organic Chemistry .....	3
Chem. 33—Elements of Organic Chemistry .....	3
Agron. 10—General Soils .....	4
Phys. 1, 2—Elements of Physics .....	3, 3

## SPECIAL CURRICULA

### DEPARTMENT OF HORTICULTURE REQUIREMENTS (*Continued*)

*Semester  
Credit Hours*

Microb. 13—Food and Sanitary Microbiology . . . . .	4
Agr. Engr. 113—Special Problems in Agricultural Processing . .	3, 4
Select a minimum of 7 semester credits from the following:	
Hort. 198—Special Problems (2, 2)	
B. A. 150—Market Management (3)	
B. A. 160—Personnel Management 1 (3)	
Chem. 15—Qualitative Analysis (4)	
Chem. 166—Food Analysis (3)	

## SPECIAL CURRICULA

### PRE-FORESTRY STUDENTS

The College of Agriculture is glad to cooperate with any student who wishes to attend the University to pursue courses which may be transferred to a standard forestry curriculum in another institution. The program which a student follows depends to some extent upon the forestry college he plans to enter. All pre-forestry students in the College of Agriculture are sent to the Department of Botany of the University for counsel and advice in these matters.

For residents of Maryland who have completed two years of pre-forestry at the University of Maryland and have been accepted in the School of Forestry at North Carolina State College, the University of Maryland will pay the non-resident fee for a period of two years.

### PRE-THEOLOGICAL STUDENTS

The College of Agriculture is glad to cooperate with the officers of any theological seminary who desire to urge its prospective students to pursue courses in agriculture as a preparation for the rural ministry. Such pre-theological students may enroll for a semester or more or for the usual four year training of the College. In either case they should enroll as members of the general curriculum in the College of Agriculture.

The electives of this curriculum may be used for such pre-theological requirements as seem desirable. Elections may be made from any of the offerings of the University such as history, political science, philosophy, agricultural economics, rural sociology, modern language, English, economics, rural sociology, natural science, education and the like. Students desiring to pursue a pre-theological program in the College of Agriculture of the University of Maryland, should consult with the president or admissions officer of the theological seminary which they expect to attend.

## SPECIAL CURRICULA

### PRE-VETERINARY STUDENTS

This program is designed for students desiring to prepare for the professional course in veterinary medicine.

A combined degree is available to students in pre-veterinary science. A student who has completed 90 academic semester credits at the University of Maryland and who has completed 30 additional academic semester credits at the University of Georgia or at any accredited veterinary school is eligible to make application for the Bachelor of Science degree from the University of Maryland.

Students wishing to apply for the combined degree must fulfill University and College requirements as set forth on page 12 and must also complete additional credits in Animal Science.

The State of Maryland has entered a regional agreement with the State of Georgia which makes ten spaces a year available in the School of Veterinary Medicine, University of Georgia. The spaces are to be filled on a competitive basis from among qualified applicants.

Candidates, to be considered qualified, must have:

- a. Completed the curriculum shown below with grades not less than "C" in any subject.
- b. Taken the veterinary medical aptitude test; and
- c. Must be a bona fide resident of Maryland.

All requirements must be completed by June prior to the September in which the student desires to matriculate in veterinary college. The pre-veterinary curriculum can be completed in two years but may be extended, thus making it possible for the applicant to select desirable electives.

After the names of the candidates have been received, a Georgia Board of Admissions will assemble at the University of Maryland and will interview each candidate and receive the transcript and all pertinent documents relating to him. The selection will be made by the Office of Admissions, University of Georgia.

The pre-veterinary curriculum should contain:

	<i>Semester Credit Hours</i>
Biological Sciences .....	12
Botany (4)	
Zoology (8)	
English and Speech .....	12



## SPECIAL CURRICULA

	<i>Semester Credit Hours</i>
Physical Sciences .....	30
Inorganic Chemistry (8)	
Organic Chemistry (8)	
Mathematics (6)	
Physics (8)	
Animal Science .....	6
Genetics .....	3
Nutrition .....	3
Social Science .....	3*
Air Science .....	4
Physical Education .....	4

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\* This credit may be satisfied by examination at the University of Georgia.

### SPECIAL STUDENTS IN AGRICULTURE

Mature students may, with the consent of the Dean, register as special students and pursue a program of studies not included in any regular curriculum, but arranged to meet the needs of the individual. All University fees for these special students are the same as fees for regular students.

### TWO-YEAR PROGRAM IN AGRICULTURE

The objective of the two-year-program is to offer a course of study to students desiring to study agriculture in college but who may be able to spend not over two years in college. This program offers training to prepare students to return to the farm or for employment in related agricultural business and industry.

Students in the two-year program will be admitted to the College of Agriculture under established University entrance requirements. Students in this program will be required to take Basic Air Science (4 hours), physical activities (4 hours) and basic sciences pertinent to agriculture. Other courses may be elected according to the specific interest of the student. Each student will be assigned to an adviser to assist him in developing a program of study.

# COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

## AGRICULTURE

### AGR. 1. INTRODUCTION TO AGRICULTURE. (1)

First semester. Required of all beginning freshmen and sophomores in agriculture. Other students must get the consent of the instructor. A series of lectures introducing the student to the broad field of agriculture. (Poffenberger.)

### AGR. 100. INTRODUCTORY AGRICULTURAL BIOMETRICS. (3)

First semester. Two lectures and one laboratory period per week. Introduction to fundamental concepts underlying the application of biometrical methods to agricultural problems with emphasis on graphical presentation of data, descriptive statistics, chi-square and t-tests, and linear regression and correlation.

### AGR. 200. AGRICULTURAL BIOMETRICS. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisite, Agr. Biom. 100 or equivalent. A continuation of Agr. 100 with emphasis on analysis of variance and co-variance, multiple and curvilinear regression, sampling, experimental design and miscellaneous statistical technique as applied to agricultural problems.

### AGR. 202, 203. ADVANCED BIOLOGICAL STATISTICS. (2, 2)

First and second semesters. Prerequisite, approval of instructor. An advanced course dealing with specialized experimental designs, sampling techniques and elaborations of standard statistical procedures as applied to the animal and plant sciences.

## AGRICULTURAL ECONOMICS

*Professors:* BEAL, CURTIS, SMITH AND WALKER.

*Associate Professors:* GARDNER, FOSTER, ISHEE, MOORE, SWOPE AND WYSONG.

*Assistant Professors:* MARSHALL AND MARTIN.

### A. E. 50. ELEMENTS OF AGRICULTURAL ECONOMICS. (3)

Second semester. An introduction to economic principles of production, marketing, agricultural prices and incomes, farm labor, credit, agricultural policies, and government programs. (Wysong.)

### A. E. 51. MARKETING OF AGRICULTURAL PRODUCTS. (3)

First semester. The development of marketing, its scope, channels, and agencies of distribution, functions, costs, methods used and services rendered. (Swope.)

### *For Advanced Undergraduates and Graduates*

### A. E. 103. ECONOMICS OF AGRICULTURAL COOPERATION. (3)

Second semester. A course in the development, expansion and consolidation of the cooperative method of business. Modern business organization and operating principles and practices related to farmer cooperatives are stressed. (Smith.)

### A. E. 104. ECONOMICS OF AGRICULTURAL TRANSPORTATION. (3)

First semester. The course deals with the unique nature of agriculture in broad perspective as it relates to economics of transportation of the products involved. It includes the development of Agricultural transportation, effect of legislation and regulation upon this development, and growth of the intercarrier competition. Theories of rate making and classification of carriers are discussed from the standpoint of the effect of transportation costs and methods upon plant and industry location in agriculture. (Smith.)

### A. E. 106. PRICES OF AGRICULTURAL PRODUCTS. (3)

Second semester: An introduction to agricultural price behavior. Emphasis is placed on the use of price information in the decision-making process, the relation of supply and demand in determining agricultural prices, and the relation of prices to grade, time, location, and stages of processing in the marketing system. The course includes elementary methods of price analysis, the concept of parity, and the role of price support programs in agricultural decisions. (Martin.)

### A. E. 107. FINANCIAL ANALYSIS OF THE FARM BUSINESS. (3)

First semester: Application of economic principles to develop criteria for a sound farm business, including credit source and use, preparing and filing income tax returns, methods of appraising farm properties, the summary and analysis of farm records, leading to effective control and profitable operation of the farm business. (Wysong.)

## AGRICULTURAL ECONOMICS

### A. E. 108. FARM MANAGEMENT. (3)

Second semester: The organization and operation of the farm business to obtain an income consistent with family resources and objectives. Principles of production economics and other related fields are applied to the individual farm business. Laboratory period will be largely devoted to field trips and other practical exercises. (Ishee.)

### A. E. 111. ECONOMICS OF RESOURCE DEVELOPMENT. (3)

First semester: Economic, political, and institutional factors which influence the use of land resources. Application of elementary economic principles in understanding social conduct concerning the development and use of natural and man-made resources. (Gardner.)

### A. E. 112. AGRICULTURAL POLICY AND PROGRAMS. (3)

First semester: A study of public policies and programs related to the problems of agriculture. Description, analysis and appraisal of current policies and programs will be emphasized. (Smith.)

### A. E. 114. WORLD AGRICULTURAL PRODUCTION AND TRADE. (3)

First semester: World production, consumption, and trade patterns for agricultural products. International trade theory applied to agricultural products. National influences on international agricultural trade. (Foster.)

### A. E. 115. MARKETING DAIRY PRODUCTS. (2)

First semester: (Offered 1964-65.) A study of principles and practices in the marketing of milk and manufactured dairy products including the influence of significant geographical and institutional relationships on costs and methods of distribution. (Beal.)

### A. E. 116. MARKETING FRUITS AND VEGETABLES. (2)

Second semester: (Offered 1964-65.) A study of marketing functions, methods, and channels of distribution for fresh and processed vegetables; analyses of supply and demand factors, prices, grading, regulatory activities, and government programs and services. (Swope.)

### A. E. 117. MARKETING EGGS AND POULTRY. (2)

Second semester: (Offered 1963-64.) This course embraces the economic phases of egg and poultry marketing. Supply and demand factors, including trends, will be discussed along with marketing methods, marketing costs and margins, market facilities, transportation, government grading, storage and efficiency in marketing. Consumer preference, acceptance and purchases will be related to consumer income, pricing of competitive products and display methods. (Smith.)

### A. E. 118. AGRICULTURE IN WORLD ECONOMIC DEVELOPMENT. (3)

First semester: The transition from a primitive agricultural economy to an economy of rapidly developing commercial agriculture and industry, and the role of agriculture in this process. Consideration of the special role American agriculture may have in world economic development. (Foster.)

### A. E. 119. FOREIGN AGRICULTURAL ECONOMIES. (3)

Second semester: Analysis of the agricultural economy of selected areas of the



## AGRICULTURAL ECONOMICS

world. The interrelationships among institutions and values, such as government and religion, and the economics of agricultural organization and production. (Foster.)

### A. E. 150. MARKETING LIVESTOCK AND MEAT. (2)

First semester: (Offered 1963-64.) Supply and demand factors, including trends in the livestock industry, are discussed along with alternative marketing systems and resulting margins and prices. Emphasis is given to the meat packing industry and problems of grading, transportation, storage, and efficiency in meat distribution. Trends in meat merchandising, consumer acceptance, and purchases will be discussed. (Smith.)

### A. E. 198. SPECIAL PROBLEMS. (1-2) (2 cr. max.) (Not for grad. cr.)

First and second semesters and summer: Concentrated reading and study in some phase or problem in agricultural economics. (Staff.)

### A. E. 199. SEMINAR. (1, 1)

First and second semesters: Students will obtain experience in the selection, preparation and presentation of economic topics and problems which will be subjected to critical analysis. (Wysong.)

## *For Graduates*

### A. E. 200. APPLICATION OF ECONOMETRICS IN AGRICULTURE. (3)

First semester: Tools for analyzing demand and price behavior of agricultural products. Theories of least squares, estimation of structural economic relations in simultaneous equation systems, identification problems, and non-linear estimation techniques. (Martin.)

### A. E. 201. ADVANCED THEORY AND PRACTICE OF INTERNATIONAL AGRICULTURAL TRADE. (3)

Second semester: Advanced theory, policies and practice in international trade in agricultural products. Includes principal theories of trade and finance, agricultural trade policies of various countries, and the mechanics of how trade is conducted. (Moore.)

### A. E. 202. MARKET STRUCTURE IN AGRICULTURE. (3)

First semester: This course centers on the concept of market structure analysis, with application of principles developed to agricultural industries. The dimension of market structure is analyzed along with its impact on conduct and performance. Considerable time is spent on policy issues and the application of the antitrust laws to agricultural industries. (Moore.)

### A. E. 208. AGRICULTURAL PRICE AND INCOME POLICY. (3)

Second semester: The evolution of agricultural policy in the United States, emphasizing the origin and development of governmental programs, and their effects upon agricultural production, prices and income. (Beal.)

### A. E. 210. RURAL TAXATION AND PUBLIC FUNCTIONS. (3)

Second semester: Theory and practical problems in rural taxation. Major types of taxes are considered in detail. The tax system as it affects farmers and rural areas will be discussed. Major functional responsibilities of the

## AGRICULTURAL ECONOMICS

different levels of governments are studied, with emphasis upon public services to rural areas and equal tax effort for support of equal functional programs.

(Gardner.)

### A. E. 214. ADVANCED AGRICULTURAL MARKETING. (3)

Second semester: Advanced study of the complex theoretical, institutional and legal factors governing both domestic and foreign agricultural trade, with particular attention given to policies and practices affecting cost and price.

(Beal.)

### A. E. 216. ECONOMICS OF AGRICULTURAL PRODUCTION. (3)

First semester: Study of the more complex problems involved in the long-range adjustments, organization and operation of farm resources, including the impact of new technology and methods. Applications of the theory of the firm, linear programming, activity analysis, and input-output analysis.

(Ishee.)

### A. E. 218. AGRICULTURAL ECONOMICS RESEARCH TECHNIQUES. (3)

First semester: Emphasis is given to philosophy and basic objectives of research in the field of agricultural economics. The course is designed to help students define a research problem and work out logical procedures for executing research in the social sciences. Attention is given to the techniques and tools available to agricultural economists. Research documents in the field will be appraised from the standpoint of procedures and evaluation of the research.

(Beal.)

### A. E. 219. ADVANCED LAND ECONOMICS. (3)

Second semester: Application of micro and macro economic principles to the analyses of special problems related to land such as public direction of land use, tenure arrangements, conservation, and land reform movements.

(Ishee.)

### A. E. 220. INTERNATIONAL IMPACTS OF SELECTED AGRICULTURAL FORCES. (3)

Second semester. Selected agricultural forces (such as pressure of population on food supply) and their impacts on the political, social, and economic development of the world.

(Foster.)

### A. E. 300. SPECIAL TOPICS IN AGRICULTURAL ECONOMICS. (3)

First and second semesters: This course is designed to offer students special subject matter in the field of Agricultural Economics. Subject matter taught in this course will be varied and will depend on the persons available for teaching unique and specialized phases of Agricultural Economics. The course will be taught by the staff or visiting Agricultural Economists who may be secured on lectureship or visiting professor basis.

(Staff.)

### A. E. 301. SPECIAL PROBLEMS IN AGRICULTURAL ECONOMICS. (1-2) (4 cr. max.)

First and second semesters and summer: Intensive study and analysis of specific problems in the field of agricultural economics, which will provide information in depth in areas of special interest to the student.

(Staff.)

## AGRICULTURAL AND EXTENSION EDUCATION

### A. E. 302. SEMINAR. (1, 1)

First and second semesters: Students will participate through study of problems in the field, reporting to seminar members and defending positions adopted. Outstanding leaders in the field will present ideas for analyses and discussion among class members. Students involved in original research will present progress reports. Class discussion will provide opportunity for constructive criticism and guidance. (Curtis.)

### A. E. 399. RESEARCH. (6 hrs. M.S.; additional 12 hrs. Ph.D.)

First, second semesters and summer: Advanced research in agricultural economics. Credit according to work accomplished. (Staff.)

## AGRICULTURAL AND EXTENSION EDUCATION

*Professor:* CARDOZIER.

*Associate Professor:* SMITH.

*Assistant Professors:* JOHNSON, JAHNS AND ADDISON.

### *For Advanced Undergraduates*

### R. ED. 101. TEACHING MATERIALS AND DEMONSTRATIONS. (2)

First semester. Principles and practices of the demonstration method; construction and use of visual aids in teaching agriculture.

### R. ED. 103. STUDENT TEACHING. (5)

First semester. Prerequisite, satisfactory academic average and permission of instructor. Fulltime student teaching in an off-campus student teaching center under an approved supervising teacher of agriculture. Participating experience in all aspects of the work of a teacher of agriculture. (Cardozier.)

### R. ED. 104. STUDENT TEACHING. (1-4)

First semester. Prerequisite, satisfactory academic average and permission of instructor. Fulltime observation and participation in work of teacher of agriculture in off-campus student teaching center. Provides students opportunity to gain experience in the summer program of work, to participate in opening of school activities, and to gain other experience needed by teachers. (Cardozier.)

### R. ED. 107. OBSERVATION AND ANALYSIS OF TEACHING AGRICULTURE. (3)

Second semester. Two lectures and one laboratory period a week. This course deals with an analysis of pupil learning in class groups. (Smith.)

### R. ED. 109. TEACHING SECONDARY VOCATIONAL AGRICULTURE. (3)

First semester. A comprehensive course in the work of high school departments of vocational agriculture. It emphasizes particularly placement, super-



## AGRICULTURAL AND EXTENSION EDUCATION

vised farming programs, the organization and administration of Future Farmer activities, and objectives and methods in all-day instruction. (Cardozier.)

### R. ED. 111. TEACHING YOUNG AND ADULT FARMER GROUPS. (1)

First semester. Characteristics of young and adult farmer instruction in agriculture. Determining needs for and organizing a course; selecting materials for instruction; and class management. Emphasis is on the conference method of teaching. (Smith.)

### R. ED. 112. DEPARTMENTAL MANAGEMENT. (1)

Second semester. One laboratory period a week. Prerequisites, R. Ed. 107 and 109, or permission of the Head of the Department. The analysis of administrative programs for high school departments of vocational agriculture. Investigations and reports.

### R. ED. 121. DIRECTED EXPERIENCE IN EXTENSION EDUCATION. (1-5)

Prerequisite, satisfactory academic average and permission of instructor. Full-time observation and participation in selected aspects of extension education in an approved training county. (Johnson.)

### R. ED. 161. 4-H ORGANIZATION AND PROCEDURE. (2)

A study of the youth phase of cooperative extension work. Emphasis is placed on the philosophy, objectives, organization, leadership development and methods used in conducting 4-H Club work at the local and county level. (Johnson.)

### R. ED. 198. SPECIAL PROBLEMS IN AGRICULTURAL EDUCATION. (1-3)

First and second semesters. Summer session. Prerequisite, approval of staff. Credit in accordance with amount of work planned. A course designed for advanced undergraduates of problems in teaching vocational agriculture. (Staff.)

### R. ED. 199. SEMINAR IN AGRICULTURAL EDUCATION. (1)

Examination of current literature, reports and discussions of problems, trends, and issues in agricultural education. (Staff.)

## *For Advanced Undergraduates and Graduates*

### R. ED. 114. RURAL LIFE AND EDUCATION. (3)

Second semester. An intensive study of the educational agencies at work in rural communities, stressing an analysis of school patronage areas, the possibilities of normal life in rural areas, early beginnings in rural education, and the conditioning effects of educational offerings. (Jahns.)

### R. ED. 150. EXTENSION EDUCATION. (2)

Second semester. The Agricultural Extension Service as an educational agency. The history, philosophy, objectives, policy, organization, legislation and methods used in extension work. (Johnson.)

### R. ED. 160. EXTENSION COMMUNICATIONS. (2)

First semester. An introduction to communications in teaching and within an organization, including barriers to communication, the diffusion process and the application of communication principles person to person, with groups and through mass media. (Johnson.)



## AGRICULTURAL AND EXTENSION EDUCATION

### R. ED. 170, 171. CONSERVATION OF NATURAL RESOURCES. (3, 3)

Laboratory fee, \$35.00. Designed primarily for teachers. Study of state's natural resources—soil, water, fisheries, wildlife, forests, and minerals—natural resources problems and practices. Extensive field study. First course concentrates on subject matter; second includes methods of teaching conservation. Courses taken concurrently in summer season.

### R. ED. 180, 181. CRITIQUE IN RURAL EDUCATION. (1, 1)

Summer session only. Current problems and trends in rural education.

### *For Graduates*

### R. ED. 200. RESEARCH METHODS IN RURAL EDUCATION. (2-3)

First semester. The scientific method, problem identification, survey of research literature, preparing research plans, design of studies, experimentation, analysis of data, and thesis writing. (Cardozier.)

### R. ED. 201. RURAL LIFE AND EDUCATION. (3)

First semester. Analysis of structure and function of rural society and application of social understandings to educational programs. (Smith.)

### R. ED. 203. FARM ORGANIZATIONS AND RURAL EDUCATION. (3)

Second semester. (Given in accordance with demand, but not more often than alternate years.) Prerequisite, R. Ed. 114 or equivalent. The part played by farm organizations in formal and information education in the rural community.

### R. ED. 204. DEVELOPING RURAL LEADERSHIP. (2)

Theories of leadership are emphasized. Techniques of identifying formal and informal leaders and the development of rural lay leaders. (Jahns.)

### R. ED. 207, 208. PROBLEMS IN RURAL EDUCATION. (2, 2)

Consideration of current problems and topics in rural education. (Smith, Cardozier.)

### R. ED. S207 A-B. PROBLEMS IN TEACHING VOCATIONAL AGRICULTURE. (1, 1)

Summer session only. A critical analysis of current problems in the teaching of vocational agriculture with special emphasis upon recent developments in all-day programs. (Smith.)

### R. ED. 209. RURAL ADULT EDUCATION. (2)

Second session. Principles of adult education applied to rural groups. Understanding adult motivation, ability and behavior. Effective methods of planning, organizing and conducting rural adult educational programs. (Jahns.)

### R. ED. 215. SUPERVISION OF STUDENT TEACHING. (1)

Summer session. Identification of experiences and activities in an effective student teaching program, responsibilities and duties of supervising teachers, and evaluation of student teaching. (Cardozier.)

## AGRICULTURAL ENGINEERING

### R. ED. 217. PROGRAM PLANNING AND EVALUATION IN AGRICULTURAL EDUCATION. (2-3)

Second semester. Analysis of community agricultural education needs, selection and organization of course content, and criteria and procedures for evaluating programs. (Smith.)

### R. ED. 225. PROGRAM DEVELOPMENT IN EXTENSION EDUCATION. (2)

Second semester. Prerequisite, R. Ed. 150 or equivalent. Principles and procedures of program planning and development in extension education. (Johnson.)

### R. ED. 240. AGRICULTURAL COLLEGE INSTRUCTION. (1)

Second semester. (Given in accordance with demand, but not more than alternate years.) Open to graduate students and members of the faculty in the College of Agriculture. A seminar type of course consisting of reports, discussions, and lectures dealing with the techniques and procedures adapted to teaching agricultural subjects at the college level. (Cardozier.)

### R. ED. 301. FIELD PROBLEMS IN RURAL EDUCATION. (1-3)

First and second semesters. Summer session. Prerequisite, six semester hours of graduate study. Problems accepted depend upon the character of the work of the student and the facilities available for study. Periodic conferences required. Final report must follow accepted pattern for field investigations. (Staff.)

### R. ED. 302. SEMINAR IN RURAL EDUCATION. (1, 1)

First and second semesters. Problems in the organization, administration, and supervision of the several agencies of rural education. Investigations, papers, and reports. (Staff.)

### R. ED. 399. RESEARCH. (1-6)

First and second semesters. Summer session. Credit hours according to work done. (Staff.)

## AGRICULTURAL ENGINEERING

*Professors:* GREEN, BURKHARDT.

*Associate Professors:* GEINGER, WINN.

*Assistant Professors:* HARRIS AND MATTHEWS.

### AGR. ENGR. 1. INTRODUCTION TO AGRICULTURAL ENGINEERING. (4)

First and second semesters. Three lectures and one laboratory per week. Applications of mathematics, physics, and engineering techniques in the solution of agricultural engineering problems. Studies will include farm power and machinery, farm structures and electrification and soil and water conservation. (Matthews.)

## AGR. ENGR. 56. INTRODUCTION TO FARM MECHANICS. (2)

First and second semesters. One lecture and one laboratory period a week. Laboratory fee, \$3.00. A study of the hand tools and power equipment and their safe use as it applies to mechanized farms. Principles and practice in arc and gas welding, cold metal and sheet metal work are provided. Also, tool fitting, woodworking, plumbing, blue print reading and use of concrete.

(Gienger.)

## AGR. ENGR. 86. AGRICULTURAL ENGINEERING SHOP TECHNIQUES. (1)

Second semester. One laboratory per week. Agricultural Engineering majors only. Shop techniques and procedures used in construction of experimental agricultural machinery and equipment. Operation principles of power and hand tools. A term problem to develop plans and techniques for construction, to select materials and to construct an assigned unit will be required.

(Burkhardt.)

### *For Advanced Undergraduates*

## AGR. ENGR. 104. FARM MECHANICS. (2)

First semester. Two laboratory periods a week. Laboratory fee, \$3.00. Available only to seniors in agricultural education. This course consists of laboratory exercises in practical farm shop and farm equipment maintenance, repair, and construction projects, and a study of the principles of shop organization and administration.

(Gienger.)

## AGR. ENGR. 113. SPECIAL PROBLEMS IN AGRICULTURAL PROCESSING. (3-4)

Second semester. Three lectures and one laboratory a week. Laboratory optional. Prerequisite, Physics 1 or 10. A study of problems in power transmission, hydraulics, electricity, thermodynamics, refrigeration, instruments and controls, materials handling, and analysis of time and motion as related to the processing of agricultural commodities.

(Matthews.)

## AGR. ENGR. 123. AGRICULTURAL PRODUCTION EQUIPMENT. (3)

First semester. Two lectures and one laboratory per week. Prerequisite, Agr. Engr. 1. Principles of operation and functions of power and machinery units as related to tillage; metering devices; cutting, conveying and separating units; and control mechanisms. Principles of internal combustion engines and power unit components.

(Matthews.)

## AGR. ENGR. 124. AGRICULTURAL MATERIALS HANDLING AND ENVIRONMENTAL CONTROL. (3)

Second semester. Two lectures and one laboratory per week. Prerequisite, Agr. Engr. 1. Characteristics of construction materials and details of agricultural structures. Fundamentals of electricity, electrical circuits, and electrical controls. Materials handling and environmental requirements of farm products and animals.

(Matthews.)

## AGR. ENGR. 143 AGRICULTURAL POWER AND MACHINERY ANALYSIS. (4)

First semester. Three lectures and one laboratory per week. Prerequisites, Agr. Engr. 1, E.S. 21 and M.E. 1. Analysis of power units and equipment used

## AGRICULTURAL ENGINEERING

for agricultural production with emphasis on functional design requirements. Fundamentals of power transmission, principles of internal combustion engines and force analysis. (Harris.)

### AGR. ENGR. 144. DESIGN OF OPERATIONAL SYSTEMS FOR AGRICULTURE. (3)

Second semester. Two lectures and one laboratory per week. Prerequisite, Math. 21 and Phys. 21. Principles and engineering requirements of agricultural environmental control. Included are studies of controlling heat and moisture produced by animals and crops, static loading of farm structures and electrical components as related to environment and materials handling. (Harris.)

### AGR. ENGR. 145. SOIL AND WATER CONSERVATION ENGINEERING. (2)

Second semester. Two lectures per week. Prerequisites, C.E. 110 and M.E. 102. Applications of engineering and soil sciences in erosion control, drainage, irrigation and watershed management. Principles of agricultural hydrology and design of water control and conveyance systems. (Green.)

### AGR. ENGR. 189. SENIOR PROBLEM. (2)

Prerequisite, approval of Department. Students will select individual projects, prepare design, conduct, experiment or analyze experimental data and present both an oral and written report to Departmental faculty. (Staff.)

### AGR. ENGR. 198. SPECIAL PROBLEMS IN FARM MECHANICS. (1-3)

First and second semesters. Prerequisite, approval of Department. Not acceptable for majors in agricultural engineering. Problems assigned in proportion to credit. (Gienger.)

## *For Graduates*

### AGR. ENGR. 201. SPECIAL TOPICS IN AGRICULTURAL ENGINEERING. (3)

First and second semesters. Two lectures and one laboratory period per week. Timely topics in specialized areas of agricultural engineering will be selected as needed by graduate students; for example, Instrumentation for Agricultural Engineering Research. (Staff.)

### AGR. ENGR. 301. SPECIAL PROBLEMS IN AGRICULTURAL ENGINEERING. (1-6)

First and second semesters. Summer session. Work assigned in proportion to amount of credit. (Staff.)

### AGR. ENGR. 302. SEMINAR. (1, 1)

First and second semesters. Prerequisite, permission of instructor. (Harris.)

### AGR. ENGR. 399. RESEARCH. (1-6)

Credit according to work accomplished. (Staff.)



## AGRONOMY—CROPS AND SOILS

*Professors:* ROTHGEB, STREET.

*Associate Professors:* AXLEY, DECKER, MILLER AND STRICKLING.

*Assistant Professors:* BEYER, CLARK, COLBY, FANNING, KRESGE AND NEWCOMER.

### CROPS

#### AGRON. 1. CROP PRODUCTION. (3)

Second semester. Two lectures and one laboratory period a week. Culture, use, improvement, adaptation, distribution, and history of field crops. (Clark.)

*For Advanced Undergraduates and Graduates*

#### AGRON. 103. CROP BREEDING. (2)

First semester, alternate years. (Offered 1964-65.) Prerequisite, Bot. 117 or Zool. 104. Principles and methods of breeding annual self and cross-pollinated plants and perennial forage species. (Beyer.)

#### AGRON. 104. TOBACCO PRODUCTION. (3)

Second semester. Three lectures a week. Prerequisite, Bot. 1. A study of the history, adaptation, distribution, culture, and improvement of various types of tobacco, with special emphasis on problems in Maryland tobacco production. Physical and chemical factors associated with yield and quality of tobacco will be stressed. (Street.)

#### AGRON. 107. CEREAL CROP PRODUCTION. (3)

First semester, alternate years. (Offered 1964-65.) Two lectures and one laboratory period a week. Prerequisite, Bot. 1. Study of the principles and practices of corn, wheat, oats, barley, rye, and soybean production. (Rothgeb.)

#### AGRON. 108. FORAGE CROP PRODUCTION. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. Study of the production and management of grasses and legumes for quality hay, silage and pasture. (Decker.)

#### AGRON. 109. TURF MANAGEMENT. (2)

First semester, alternate years. (Offered 1965-66.) Two lectures a week. Prerequisite, Bot. 1. A study of principles and practices in management of turf for lawns, athletic fields, playgrounds, airfields, and highway planting.

#### AGRON. 151. CROPPING SYSTEMS. (2)

Second semester. Two lectures a week. Prerequisite, Agron. 1 or equivalent. The coordination of information from various courses in the development of balanced cropping systems, appropriate to different objectives in various areas of the state and nation. (Clark.)

#### AGRON. 152. SEED PRODUCTION AND DISTRIBUTION. (2)

Second semester, alternate years. (Offered 1964-65.) One lecture and one labo-

## AGRONOMY—CROPS AND SOILS

ratory period a week. Prerequisite, Agron. 1 or equivalent. A study of seed production, processing, and distribution; federal and state seed control programs; seed laboratory analyses; release of new varieties and maintenance of foundation seed stocks. (Newcomer.)

### AGRON. 154. WEED CONTROL. (3)

First semester, alternate years. (Offered 1965-66.) Two lectures and one laboratory period a week. Prerequisite, Agron. 1 or equivalent. A study of the use of cultural practices and chemical herbicides in the control of weeds. (Colby.)

### *For Graduates*

### AGRON. 201. ADVANCED CROP BREEDING. (2)

First semester, alternate years. (Offered 1965-66.) Prerequisite, Agron. 103 or equivalent. Genetic, cytogenetic, and statistical theories underlying methods of plant breeding. A study of quantitative inheritance, herterosis, heritability, interspecific and intergeneric hybridization, polyploidy, sterility mechanisms, inbreeding and outbreeding, and other topics as related to plant breeding. (Beyer.)

### AGRON. 204. TECHNIC IN FIELD CROP RESEARCH. (2)

Second semester, alternate years. (offered 1964-65.) Field plot technic, application of statistical analysis to agronomic data, and preparation of the research project.

### AGRON. 205. ADVANCED TOBACCO PRODUCTION. (2)

First semester, alternate years. (Offered 1965-66.) Two lectures a week. Prerequisite, permission of instructor. A study of the structural adaptation and chemical response of tobacco to environmental variations. Emphasis will be placed on the alkaloids and other unique components. (Street.)

### AGRON. 207. ADVANCED FORAGE CROPS. (2)

First semester, alternate years. (Offered 1964-65.) Two lectures a week. Prerequisites, Bot. 101, Chem. 31 and 32, or equivalent, or permission of instructor. A fundamental study of physiological and ecological responses of grasses and legumes to environmental factors, including fertilizer elements, soil moisture, soil temperature, air temperature, humidity, length of day, quality and intensity of light, wind movement, and defoliation practices. Relationship of these factors to life history, production, chemical and botanical composition, quality, and persistence of forages will be considered. (Decker.)

### AGRON. 208. RESEARCH METHODS. (2)

Second semester. Prerequisite, permission of staff. Development of research viewpoint by detailed study and report on crop research of the Maryland Experiment Station or review of literature on specific phases of a problem. (Staff.)

### AGRON. S210. CROPPING SYSTEMS. (1)

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It deals with outstanding problems and the latest developments in the field. Additional courses under CROPS AND SOILS.

## SOILS

### AGRON. 10. GENERAL SOILS. (4)

Second semester. Three lectures and one laboratory period each week. Prerequisite, Chem. 1 or permission of instructor. A study of the fundamentals of soils including their origin, development, relation to natural sciences, effect on civilization, physical properties, and chemical properties. (Kresge.)

### *For Advanced Undergraduates and Graduates*

### AGRON. S110. SOIL MANAGEMENT. (1)

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents dealing with factors involved in management of soils in general and of Maryland soils in particular. Emphasis is placed on methods of maintaining and improving chemical, physical, and biological characteristics of soils. (Strickling.)

### AGRON. 111. SOIL FERTILITY PRINCIPLES. (3)

First semester, alternate years. (Offered 1964-65.) Three lectures a week. Prerequisite, Agron. 10. A study of the chemical, physical, and biological characteristics of soils that are important in growing crops. Soil deficiencies of physical, chemical, or biological nature and their correction by the use of lime, fertilizers, and rotations are discussed and illustrated.

### AGRON. 112. COMMERCIAL FERTILIZERS. (3)

Second semester. Three lectures a week. Prerequisites, Agron. 10 or permission of instructor. A study of the manufacturing of commercial fertilizers and their use in soils for efficient crop production. (Axley.)

### AGRON. 113. SOIL CONSERVATION. (3)

First semester, alternate years. (Offered 1964-65.) Two lectures and one laboratory period a week. Prerequisite, Agron. 10 or permission of instructor. A study of the importance and causes of soil erosion, and methods of soil erosion control. Special emphasis is placed on farm planning for soil conservation. The laboratory period will be largely devoted to field trips. (Pomeroy.)

### AGRON. 114. SOIL CLASSIFICATION AND GEOGRAPHY. (4)

Second semester. Three lectures and one laboratory period a week. Prerequisite, Agron. 10, or permission of instructor. A study of the genesis, morphology, classification and geographic distribution of soils. The broad principles governing soil formation are explained. Attention is given to the influence of geographic factors on the development and use of the soils in the United States and other parts of the world. The laboratory periods will be largely devoted to the field trips and to a study of soil maps of various countries. (Fanning.)

### AGRON. 116. SOIL CHEMISTRY. (3)

First semester, alternate years. (Offered 1964-65.) One lecture and two laboratory periods a week. Prerequisite, Agron. 10, or permission of instructor. A study of the chemical composition of soils; cation and anion exchange; acid, alkaline and saline soil conditions; and soil fixation of plant nutrients. Chemical methods of soil analysis will be studied with emphasis on their relation to fertilizer requirements. (Axley.)

## AGRONOMY—CROPS AND SOILS

### AGRON. 117. SOIL PHYSICS. (3)

First semester, alternate years. (Offered 1965-66.) Two lectures and one laboratory period a week. Prerequisite, Agron. 10 and a course in physics, or permission of instructor. A study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling.)

### AGRON. 119. SOIL MINERALOGY. (4)

First semester, alternate years. (Offered 1965-66.) Two lectures and two laboratory periods a week. Prerequisite, permission of instructor. A study of the fundamental laws and forms of crystal symmetry and essentials of crystal structure; structure, occurrence, association and use of minerals, determination of minerals by means of their morphological chemical and physical properties. Particular attention is given to soil-forming minerals. Laboratory periods will be devoted to a systematic study of about 75 minerals. Additional courses under CROPS AND SOILS. (Fanning.)

### *For Graduates*

### AGRON. 250. ADVANCED SOIL MINERALOGY. (3)

First semester, alternate years. (Offered 1964-65.) Three lectures a week. Prerequisites, Agron. 10, Agron. 119 and permission of instructor. A study of the structure physical-chemical characteristics and identification methods of soil minerals, particularly clay minerals, and their relationship to soil genesis and productivity. (Fanning.)

### AGRON. 251. ADVANCED METHODS OF SOIL INVESTIGATION. (3)

First semester, alternate years. (Offered 1965-66.) Three lectures a week. Prerequisites, Agron. 10 and permission of instructor. An advanced study of the theory of the chemical methods of soil investigation with emphasis on problems involving application of physical chemistry. (Axley.)

### AGRON. 252. ADVANCED SOIL PHYSICS. (3)

Second semester, alternate years. (Offered 1965-66.) Two lectures and one laboratory period a week. Prerequisite, Agron. 10 and permission of instructor. An advanced study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling.)

### AGRON. 253. ADVANCED SOIL CHEMISTRY. (3)

First semester, alternate years. (Offered 1964-65.) One lecture and two laboratory periods a week. Prerequisite, permission of instructor. A continuation of Agron. 116 with emphasis on soil chemistry of minor elements necessary for plant growth. (Axley.)  
Additional courses under CROPS AND SOILS.

## CROPS AND SOILS

### *For Advanced Undergraduates*

### AGRON. 198. SPECIAL PROBLEMS IN AGRONOMY. (1)

Second semester. Prerequisites, Agron. 10, 107, 108 or permission of instructor. A detailed study, including a written report of an important problem in agronomy. (Staff.)



**AGRON. 199. SENIOR SEMINAR. (1)**

First semester. Reports by seniors on current scientific and practical publications pertaining to agronomy. (Miller.)

*For Graduates*

**AGRON. 260. RECENT ADVANCES IN AGRONOMY. (2-4)**

First semester. Two hours each year. Total credit four hours. Prerequisite, permission of instructor. A study of recent advances in agronomy research. (Staff.)

**AGRON. 302. AGRONOMY SEMINAR. (1, 1)**

First and second semesters. Total credit toward M. S. 2; toward Ph.D., 6. Prerequisite, permission of instructor. (Staff.)

**AGRON. 399. RESEARCH.**

First and second semesters. Credit according to work done. (Staff.)

**ANIMAL SCIENCE**

**ANIMAL:**

*Professors:* FOSTER AND GREEN.

*Associate Professor:* BURIC AND LEFFEL.

*Assistant Professor:* YOUNG.

**DAIRY:**

*Professors:* DAVIS, ARBUCKLE AND KEENEY.

*Associate Professors:* HEMKEN, KING, MATTICK, STEWART AND WILLIAMS.

*Assistant Professor:* VANDERSALL.

*Instructor:* SEELEY.

*Lecturer:* PLOWMAN.

**POULTRY:**

*Professors:* SHAFFNER AND COMBS.

*Associate Professors:* QUIGLEY, CREEK, HELBACKA AND WILCOX.

**VETERINARY SCIENCE:**

*Professor:* DeVOLT.

*Assistant Professor:* BROWN.

**AN. SC. 1. PRINCIPLES OF ANIMAL SCIENCE. (3)**

First semester. Two lectures and one, two-hour laboratory period per week. A comprehensive course, including the development of animal science, its con-

## ANIMAL SCIENCE

tributions to the economy, characteristics of animal products, factors of efficient and economical production and distribution. (Young.)

### AN. SC. 5. INTRODUCTION TO FOOD SCIENCE. (3)

Second semester. Two lectures and one laboratory per week. An introductory course in food science which includes a survey of food industries, composition, nutritive value, quality, materials handling, processing methods and marketing. (Mattick.)

### AN. SC. 10. FEEDS AND FEEDING. (3)

First semester. (For students not majoring in Animal, Dairy or Poultry Science.) Credit not allowed for both An. Sc. 15 and An. Sc. 10. Two lectures and one laboratory period per week. Prerequisites, Chem. 1 and 3. Elements of nutrition, source, characteristics and adaptability of the various feedstuffs to the several classes of livestock. A study of the composition of feeds, the nutrient requirements of farm animals and the formulation of economic diets and rations for livestock. (Leffel.)

### AN. SC. 15. FUNDAMENTALS OF NUTRITION. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisite, Organic Chem. 31. A study of the fundamental role of all nutrients in the body, including digestion, absorption and metabolism. Dietary requirements and nutritional deficiency syndromes of laboratory and farm animals and of man will be considered. (Combs.)

### AN. SC. 20. FUNDAMENTALS OF ANIMAL PRODUCTION. (3)

First semester. Two lectures and one laboratory period per week. This course deals with the adaptation of beef cattle, sheep, swine and horses to significant and specific uses. Breeding, feeding, management practices and criteria for evaluating usefulness are emphasized. (Young.)

### AN. SC. 21. SEMINAR. (1)

First semester. One lecture per week. Reviews, reports and discussions of pertinent subjects in Animal Science. (Staff.)

### AN. SC. 22. LIVESTOCK EVALUATION. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisite, An. Sc. 1 or permission of instructor. A study of type and breed characteristics of beef cattle, sheep and swine and of the market classes of livestock which best meet present day demands. One field trip of about two days duration is made during which students participate in the Annual Eastern Intercollegiate Livestock Clinic. (Buric.)

### AN. SC. 40. DAIRY PRODUCTION. (3)

First semester. Two lectures and one laboratory period per week. Prerequisite, An. Sc. 1. A comprehensive course in dairy breeds, selection of dairy cattle, dairy cattle nutrients, feeding and management. (Hemken.)

### AN. SC. 41. DAIRY CATTLE TYPE APPRAISAL. (2)

Second semester. Freshmen, by permission of instructor. Two laboratory periods. Analysis of dairy cattle type with emphasis on the comparative judging of dairy cattle. (Stewart.)

**AN. SC. 61. ADVANCED POULTRY JUDGING. (1)**

First semester. Prerequisite, An. Sc. 1. One lecture or laboratory period per week. The theory and practice of judging and culling by physical means is emphasized, including correlation studies of characteristics associated with productivity. Contestants for regional collegiate judging competitions will be selected from this class. (Quigley.)

**AN. SC. 62. COMMERCIAL POULTRY MANAGEMENT. (3)**

Second semester. Prerequisite, An. Sc. 1. A symposium of finance, investment, plant layout, specialization, purchase of supplies and management problems in baby chick, egg, broiler and turkey production; foremanship, advertising, selling, by-products, production and financial records. Field trips required. (Quigley.)

**AN. SC. 80. GRADING DAIRY PRODUCTS. (2)**

Second semester. Two laboratory periods per week. Market grades and the judging of milk, butter, cheese and ice cream. (King.)

**AN. SC. 110. APPLIED ANIMAL NUTRITION. (3)**

First semester. Two lectures and one laboratory period per week. Prerequisite, Math. 10, An. Sc. 15 or permission of instructor. A critical study of those factors which influence the nutritional requirements of ruminants, swine and poultry. Practical feeding methods and procedures used in formulation of economically efficient rations will be presented. (Vandersall.)

**AN. SC. 116. ANATOMY OF DOMESTIC ANIMALS. (3)**

First semester. One lecture and two laboratory periods per week. A systematic comparative study of the pig, ruminants and fowl, with special emphasis of those systems important in animal production. Prerequisite, Zoology 1. (Brown.)

**AN. SC. 117. INTRODUCTION TO DISEASES OF ANIMALS. (3)**

Second semester. Two lectures and one laboratory period per week. This course gives basic instruction in the nature of disease: including causation, immunity, methods of diagnosis, economic importance, public health aspects and prevention and control of the common diseases of sheep, cattle, swine, horses and poultry. Prerequisite, Micro. 1 and Zoology 1. (Brown.)

**AN. SC. 120. ADVANCED LIVESTOCK JUDGING. (2)**

First semester. Two laboratory periods per week. Prerequisites, An. Sc. 22 and permission of instructor. An advanced course in the selection and judging of purebred and commercial meat animals. The most adept students enrolled in this course are chosen to represent the University of Maryland in Inter-collegiate Livestock judging contests. (Buric.)

**AN. SC. 121. MEAT AND MEAT PRODUCTS. (3)**

Second semester. One lecture and two laboratory periods per week. Prerequisite, An. Sc. 20. Designed to give information on the processing and handling of the nation's meat supply. A study of the physical and structural qualities which affect the value of meat and meat products. Trips are made to packing houses and meat distributing centers. (Buric.)

## ANIMAL SCIENCE

### AN. SC. 122. LIVESTOCK MANAGEMENT. (3)

First semester. One lecture and two laboratory periods per week. Prerequisite, An. Sc. 15. Applications of various phases of animal science to the management and production of beef cattle, sheep and swine. (Foster.)

### AN. SC. 123. LIVESTOCK MANAGEMENT. (3)

Second semester. One lecture and two laboratory periods per week. Prerequisite, An. Sc. 122. Applications of various phases of animal science to the management and production of beef cattle, sheep and swine. (Leffel.)

### AN. SC. 130. PRINCIPLES OF BREEDING. (3)

Second semester. Three lectures per week. Prerequisites, Zoology 104 or Bot. 117. Graduate credit (1-3 hours) allowed with permission of instructor. The practical aspects of animal breeding, heredity, variation, selection, development, systems of breeding and pedigree study are considered. (Green.)

### AN. SC. S131. SPECIAL TOPICS IN ANIMAL SCIENCE. (1)

Prerequisite, permission of instructor. Summer session only. This course is designed primarily for teachers of vocational agriculture and Extension Service personnel. One primary topic, to be selected mutually by the instructor and students, will be presented each session.

### AN. SC. 140. PHYSIOLOGY OF REPRODUCTION. (1)

First semester. One, three-hour laboratory period per week. Prerequisite, Zoology 102. Anatomy and physiology of the reproductive process and artificial insemination of cattle. (Williams.)

### AN. SC. 141. PHYSIOLOGY OF MILK SECRETION. (1)

Second semester. One, three-hour laboratory period per week. Prerequisite, Zoology 102. The anatomy and growth of the mammary gland and the metabolism and physiology of biosynthesis in the ruminant. (Williams.)

### AN. SC. 142. DAIRY CATTLE BREEDING. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisites, An. Sc. 40, Zoology 104 or Bot. 117. A specialized course in breeding dairy cattle. Emphasis is placed on methods of evaluation and selection, systems of breeding and breeding programs. (Plowman.)

### AN. SC. S143. ADVANCED DAIRY PRODUCTION. (1)

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It includes a study of the newer discoveries in dairy cattle nutrition, breeding and management.

### AN. SC. 160. TECHNOLOGY OF MARKET EGGS AND POULTRY. (3)

First semester. Two lectures and one laboratory period per week. A study of the technological factors concerned with the processing, storage and marketing of eggs and poultry and of the factors affecting their quality and grading. (Helbacka.)

### AN. SC. 161. POULTRY GENETICS. (3)

Second semester. Prerequisites, An. Sc. 1 and Zoology 104. Two lectures and one laboratory period per week. Inheritance of factors related to egg and meat production and quality are stressed. An experiment utilizing procedures of pedigree matings will be performed in the laboratory. (Wilcox.)



**AN. SC. 162. AVIAN PHYSIOLOGY. (2)**

First semester. One three-hour laboratory period per week. Prerequisites, Zoology 102 and An. Sc. 116. The basic physiology of the bird is discussed, excluding the reproductive system. Special emphasis is given to physiological differences between birds and other vertebrates. (Wilcox.)

**AN. SC. S163. POULTRY BREEDING AND FEEDING. (1)**

Summer session only. This course is designed primarily for teachers of vocational agriculture and extension service workers. The first half will be devoted to problems concerning breeding and the development of breeding stock. The second half will be devoted to nutrition. (Combs, Wilcox.)

**AN. SC. S164. POULTRY PRODUCTS AND MARKETING. (1)**

Summer session only. This course is designed primarily for teachers of vocational agriculture and county agents. It deals with the factors affecting the quality of poultry products and with hatchery management problems, egg and poultry grading, preservation problems and market outlets for Maryland poultry. (Helbacka.)

**AN. SC. 165. PHYSIOLOGY OF HATCHABILITY. (1)**

Second semester. One, three-hour laboratory period per week. Prerequisite, Zoology 102. The physiology of embryonic development as related to principles of hatchability and problems of incubation encountered in the hatchery industry are discussed. (Shaffner.)

**AN. SC. 170. POULTRY HYGIENE. (3)**

Second semester. Two lectures and one laboratory period per week. Prerequisites, Microb. 1 and An. Sc. 1. Virus, bacterial and protozoon diseases; parasitic diseases, prevention, control and eradication. (DeVult.)

**AN. SC. 171. AVIAN ANATOMY. (3)**

First semester. Two lectures and one laboratory per week. Prerequisite, Zoology 1. Gross and microscopic structure, dissection and demonstration. (DeVult.)

**AN. SC. 180. FOOD CHEMISTRY. (3)**

First semester. Two lectures and one laboratory per week. Prerequisites, Organic Chemistry and Quantitative Analysis. The application of basic chemical and physical concepts to the composition and properties of foods. Emphasis will be placed on the relationships of processing Technology and chemical composition on the color, texture, flavor, keeping quality, nutritional value and general acceptability of food. (King.)

**AN. SC. 181. PRODUCT DEVELOPMENT. (3)**

Second semester. Organization of the research and development function for development of new, economically feasible and marketable food products. Includes consideration of equipment and packaging development. (Mattick.)

**AN. SC. 182. PROCESSING MILK AND MILK PRODUCTS. (3)**

Second semester. Two lectures and one laboratory period per week. Prerequisites, An. Sc. 180. Method of production of fluid milk, butter, cheese, condensed and evaporated milk and milk products and ice cream. (Mattick.)

## ANIMAL SCIENCE

### AN. SC. 198. SPECIAL PROBLEMS IN ANIMAL SCIENCE (1-2) (4 cr. max.)

First and second semester. Prerequisite, approval of staff. Work assigned in proportion to amount of credit. A course designed for advanced undergraduates in which specific problems relating to animal science will be assigned.

(Staff.)

### AN. SC. 199. SEMINAR. (1, 1)

First and second semesters. Prerequisite, permission of staff. Presentation and discussion of current literature and research work in animal science. (Staff.)

### AN. SC. 200. ELECTRON MICROSCOPY. (2)

First and second semesters. One lecture and one laboratory period per week. Theory of the electron microscope, preparation of specimens, manipulations and photography. (Chang.)

### AN. SC. 220. ADVANCED BREEDING. (2)

Second semester. Two lectures per week. Prerequisites, An. Sc. 130 or equivalent and Biological Statistics. This course deals with the more technical phases of heredity and variation; selection indices; breeding systems; inheritance in farm animals. (Green.)

### AN. SC. 221. ADVANCED LIVESTOCK NUTRITION. (3)

Second semester. Three lectures per week. Prerequisites, Chem. 31 and 33 or equivalent, An. Sc. 110 or permission of instructors. Experimental techniques and recent developments in the feeding and nutrition of beef cattle, sheep and swine. (Leffel, Young.)

### AN. SC. 240. ADVANCED RUMINANT NUTRITION. (3)

First semester. Two, one-hour lectures and one, two-hour laboratory per week. Prerequisite, permission of department. Biochemical physiological and bacteriological aspects of the nutrition of ruminants and other animals.

(Vandersall.)

### AN. SC. 241. RESEARCH METHODS. (3)

First semester. One lecture and two laboratory periods per week. Prerequisite, permission of instructor. The application of biochemical, physio-chemical and statistical methods to problems in biological research. (Stewart.)

### AN. SC. 260. ADVANCED POULTRY NUTRITION. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisites, An. Sc. 110, Chem. 31 and 33 or its equivalent or permission of instructor. A fundamental study of the dietary role of proteins, minerals, vitamins, antibiotics and carbohydrates is given as well as a study of the digestion and metabolism of these substances. Deficiency diseases as produced by the use of synthetic diets are considered. (Combs.)

### AN. SC. 261. PHYSIOLOGY OF REPRODUCTION. (3)

First semester. Two lectures and one laboratory period per week. Prerequisite, Zoology 102 or its equivalent. The role of the endocrines in reproduction is considered. Fertility, sexual maturity, egg formation, ovulation and the physiology of oviposition are studied. Comparative mammalian functions are discussed. (Shaffner.)

**AN. SC. 262. POULTRY LITERATURE. (1-4)**

First and second semesters. Readings on individual topics are assigned. Written reports required. Methods of analysis and presentation of scientific material are discussed. (Staff.)

**AN. SC. 263. POULTRY NUTRITION LABORATORY. (2)**

First semester. One lecture and one laboratory period per week. To acquaint graduate students with common basic nutrition research techniques useful in conducting experiments with poultry. Actual feeding trials with chicks as well as bacteriological and chemical assays will be performed. (Creek.)

**AN. SC. 301. SPECIAL PROBLEMS IN ANIMAL SCIENCE (1-2) (4 cr. max.)**

First and second semesters. Prerequisite, approval of staff. Work assigned in proportion to amount of credit. Problems will be assigned which relate specifically to the character of work the student is pursuing.

**AN. SC. 302. SEMINAR. (1) (5 cr. max.)**

First and second semesters. Students are required to prepare papers based upon current scientific publications relating to Animal Science or upon their research work, for presentation before and discussion by the class.

**AN. SC. 399. RESEARCH. (1-12)**

First and second semesters. Work assigned in proportion to amount of credit. Students will be required to pursue original research in some phase of animal science, carrying the same to completion, and report the results in the form of a thesis.

**BOTANY**

*Professors:* BAMFORD, GAUCH, WEAVER, D. T. MORGAN AND KRAUSS.

*Associate Professors:* BROWN, O. D. MORGAN, RAPPLEYE, SISLER, PATERSON, AND KANTZES.

*Assistant Professors:* GALLOWAY, KRUSBERG, BELL, WILLIAMS, LOCKARD, AND KLARMAN.

**BOT. 1. GENERAL BOTANY. (4)**

First and second semesters. Summer session. Two lectures and two laboratory periods a week. Laboratory fee, \$6.00. General introduction to botany, touching briefly on all phases of the subject. Emphasis is on the fundamental biological principles of the higher plants.

**BOT. 2. GENERAL BOTANY. (4)**

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Bot. 1 or equivalent. Laboratory fee, \$6.00. A brief evolutionary study of algae, fungi, liverworts, mosses, ferns and their relatives, and the seed plants, emphasizing their structure, reproduction, habitats, and economic importance.

## BOTANY

### BOT. 10. PRINCIPLES OF CONSERVATION. (3)

First semester. Three lectures per week. A study of the principles of economical use of our natural resources, including water, soil, plants, minerals, wildlife and man.

### BOT. 11. PLANT TAXONOMY. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$6.00. An introductory study of plant classification, based on the collection and identification of local plants.

### BOT. 20. DISEASES OF PLANTS. (4)

First semester. Two lectures and two laboratory periods a week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$6.00. An introductory study of the symptoms and causal agents of plant diseases and measures for their control.

#### *For Advanced Undergraduates*

### BOT. 110. PLANT MICROTECHNIQUE. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$6.00. An introductory study of plant classification, based on the collection and identification of local plants. inations, including the preparation of temporary and permanent mounts, and photomicrography. (Paterson.)

#### *For Advanced Undergraduates and Graduates*

### BOT. 195. TUTORIAL READINGS IN BOTANY. (HONORS COURSE) (2 or 3)

Prerequisite, admission to the Department of Botany Honors Program. A review of the literature dealing with a specific research problem in preparation for original research to be accomplished in Botany 196. Papers will be assigned and discussed in frequent sessions with the instructor.

### BOT. 196. RESEARCH PROBLEMS IN BOTANY. (HONORS COURSE) (2 or 3)

Prerequisite, Bot. 195. Laboratory fee, \$10.00. The candidate for Honors will pursue a research problem under the direction and close supervision of a member of the faculty.

### BOT. 199. SEMINAR. (1)

First and second semesters. Two semester hours maximum credit. Prerequisite, permission of instructor. Discussion and readings on special topics, current literature, or problems and progress in all phases of botany. Minor experimental work may be pursued if facilities and the qualifications of the students permit. For seniors only, majors and minors in botany or biological science. (Brown.)

## PLANT PHYSIOLOGY

#### *For Advanced Undergraduates and Graduates*

### BOT. 101. PLANT PHYSIOLOGY. (4)

First semester. Two lectures and two laboratory periods a week. Prerequisites, Bot. 1 and General Chemistry. Laboratory fee, \$6.00. A survey of the general physiological activities of plants. (Krauss.)



**BOT. 102. PLANT ECOLOGY. (2)**

Second semester. Prerequisite, Bot. 1. A study of the different plant successions and vegetational climaxes and their correlation with the climatic, soil, and biotic factors of the environment. (Brown.)

**BOT. 103. PLANT ECOLOGY LABORATORY. (1)**

Prerequisite, Bot. 102 or its equivalent or concurrent enrollment therein. One three-hour laboratory period a week. Laboratory fee, \$5.00. The application of field and other methods to these qualitative and quantitative study of vegetation and environmental factors. (Brown.)

**BOT. 200. PLANT BIOCHEMISTRY. (2)**

First semester. (Not offered 1965-1966.) Prerequisites, Bot. 101 and elementary organic chemistry, or equivalent. A study of the important substances in the composition of the plant body and the chemical changes occurring therein. (Galloway.)

**BOT. 201. PLANT BIOCHEMISTRY LABORATORY. (2)**

First semester. (Not offered 1965-1966.) Two laboratory periods a week. Prerequisite, Bot. 200 or concurrent registration therein. Laboratory fee, \$10.00. Application of apparatus and techniques to the study of the chemistry of plant materials. (Galloway.)

**BOT. 202. PLANT BIOPHYSICS. (2)**

Second semester. (Not offered 1964-1965.) Prerequisite, Bot. 101 and introductory physics, or equivalent. An advanced course dealing with the operation of physical phenomena in plant life processes. (Galloway.)

**BOT. 203. BIOPHYSICAL METHODS. (2)**

Second semester. (Not offered 1964-1965.) Two laboratory periods a week. Laboratory course to accompany Bot. 202. Laboratory fee, \$10.00. (Galloway.)

**BOT. 204. GROWTH AND DEVELOPMENT. (2)**

First semester. (Not offered 1964-1965.) Prerequisite, 12 semester hours of plant science. A study of current developments in the mathematical treatment of growth and the effects of radiation, plant hormones, photoperiodism, and internal biochemical balance during the development of the plant. (Krauss.)

**BOT. 205. MINERAL NUTRITION OF PLANTS. (2)**

Second semester. (Not offered 1965-1966.) Reports on current literature are presented and discussed in connection with recent advances in the mineral nutrition of plants. (Krauss.)

**BOT. 209. PHYSIOLOGY OF ALGAE. (2)**

Second semester. Prerequisite, Bot. 201, the equivalent in allied fields, or permission of the instructor. A study of the physiology and comparative biochemistry of the algae. Laboratory techniques and recent advances in algal nutrition, photosynthesis, and growth will be reviewed. (Krauss.)

**BOT. 210. PHYSIOLOGY OF ALGAE-LABORATORY. (1)**

Second semester. One laboratory period a week. Prerequisites, previous or concurrent enrollment in Bot. 209, and permission of instructor. Laboratory fee, \$10.00. Special laboratory techniques involved in the study of algal nutrition. (Krauss.)

## BOTANY

### BOT. 219. ADVANCED PLANT ECOLOGY. (2)

Fall semester. (Not offered 1965-1966.) Prerequisite, Bot. 102 or equivalent and permission of instructor. Discussion of current developments in ecology, with emphasis on quantitative and radioecological techniques and the energy exchanges in ecological systems. Field trips and problems will be arranged. (Brown.)

## PLANT MORPHOLOGY, CYTOLOGY AND TAXONOMY

### *For Advanced Undergraduates and Graduates*

### BOT. 111. PLANT ANATOMY. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 110, or equivalent. Laboratory fee, \$5.00. The origin and development of the organs and tissue systems in the vascular plants. (Rappleye.)

### BOT. 113. PLANT GEOGRAPHY. (2)

First semester. Prerequisite, Bot. 1, or equivalent. A study of plant distribution throughout the world and the factors generally associated with such distribution. (Brown.)

### BOT. 115. STRUCTURE OF ECONOMIC PLANTS. (3)

Second semester. (Not offered 1965-1966.) One lecture and two laboratory periods a week. Prerequisite, Bot. 111. Laboratory fee, \$5.00. A detailed microscopic study of the anatomy of the chief fruit and vegetable crops. (Rappleye.)

### BOT. 116. HISTORY AND PHILOSOPHY OF BOTANY. (1)

Second semester. (Not offered 1964-1965.) Prerequisites, 20 semester hours credit in biological sciences, including Bot. 1 or equivalent. Discussion of the development and ideas and knowledge about plants, leading to a survey of contemporary work in botanical science. (Bamford.)

### BOT. 117. GENERAL PLANT GENETICS. (2)

Second semester. Prerequisite, Bot. 1 or equivalent. The basic principles of plant genetics are presented; the mechanics of transmission of the hereditary factors in relation to the life cycle of seed plants, the genetics of specialized organs and tissues, spontaneous and induced mutations of basic and economic significance, gene action, genetic maps, the fundamentals of polyloidy, and genetics in relation to methods of plant breeding are the topics considered. (D. T. Morgan.)

### BOT. 136. PLANTS AND MANKIND. (2)

First semester. Prerequisite, Bot. 1 or equivalent. A survey of the plants which are utilized by man, the diversity of such utilization, and their historic and economic significance. (Rappleye.)

### BOT. 151S. TEACHING METHODS IN BOTANY. (2)

Summer session. Four two-hour laboratory demonstration periods per week for eight weeks. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$5.00. A study of the biological principles of common plants, and demonstrations, projects, and visual aids suitable for teaching in primary and secondary schools. (Lockard.)

**BOT. 153. FIELD BOTANY AND TAXONOMY. (2)**

Summer session. Prerequisite, Bot. 1 or General Biology. Four two-hour laboratory periods a week for eight weeks. Laboratory fee, \$5.00. The identification of trees, shrubs, and herbs, emphasizing the native plants of Maryland. Manuals, keys, and other techniques will be used. Numerous short field trips will be taken. Each student will make an individual collection. (Brown.)

**BOT. 161. SYSTEMATIC BOTANY. (2)**

Fall semester. (Not offered 1964-1965.) Two two-hour laboratory periods a week. Prerequisite, Bot. 11 or equivalent. An advanced study of the principles of systematic botany. Laboratory practice with difficult plant families including grasses, sedges, legumes, and composites. Field trips arranged. (Brown.)

*For Graduates*

**BOT. 211. CYTOLOGY. (4)**

First semester. (Not offered 1965-1966.) Two lectures and two laboratory periods a week. Prerequisite, introductory genetics. Laboratory fee, \$10.00. A detailed study of the chromosomes in mitosis and meiosis, and the relation of these to current theories of heredity and evolution. (Bamford, D. T. Morgan.)

**BOT. 212. PLANT MORPHOLOGY. (3)**

Second semester. One lecture and two laboratory periods a week. Prerequisites, Bot. 11, Bot. 111, or equivalent. Laboratory fee, \$5.00. A comparative study of the morphology of the flowering plants, with special reference to the phylogeny and development of floral organs. (Rappleye.)

**BOT. 215. PLANT CYTOGENETICS. (3)**

First semester. (Not offered 1964-1965.) Two lectures and one laboratory period a week. Prerequisite, introductory genetics. Laboratory fee, \$10.00. An advanced study of the current status of plant genetics, particularly gene mutations and their relation to chromosome changes in corn and other favorable materials. (D. T. Morgan.)

**PLANT PATHOLOGY**

*For Advanced Undergraduates and Graduates*

**BOT. 122. RESEARCH METHODS IN PLANT PATHOLOGY. (2)**

First or second semester. Two laboratory periods a week. Prerequisite, Bot. 20, or equivalent. Laboratory fee, \$5.00. Advanced training in the basic research techniques and methods of plant pathology. (Klarman.)

**BOT. 123. DISEASES OF ORNAMENTAL PLANTS. (2)**

Second semester. (Not offered 1964-1965.) Prerequisite, Bot. 20, or equivalent. Symptoms, control measures, and other pertinent information concerning the diseases which affect important ornamental plants grown in the eastern states. (Klarman.)

## BOTANY

### BOT. 124. DISEASES OF TOBACCO AND AGRONOMIC CROPS. (2)

First semester. (Not offered 1965-1966.) Prerequisite, Bot. 20, or equivalent. The symptoms and control of the diseases of tobacco, forage crops and cereal grains. (O. D. Morgan.)

### BOT. 125. DISEASES OF FRUIT CROPS. (2)

First semester. (Not offered 1964-1965.) Prerequisite, Bot. 20, or equivalent. Symptoms and control of the diseases affecting fruit production in the eastern United States. (Weaver.)

### BOT. 126. DISEASES OF VEGETABLE CROPS. (2)

Second semester. (Not offered 1965-1966.) Prerequisite, Bot. 20, or equivalent. The recognition and control of diseases affecting the production of important vegetable crops grown in the eastern United States. (Kantzes.)

### BOT. 128. MYCOLOGY. (4)

Second semester. (Not offered 1965-1966.) Laboratory fee, \$6.00. An introductory study of the morphology, classification, life histories, and economics of the fungi. (Paterson.)

### BOT. 152S. FIELD PLANT PATHOLOGY. (1)

Summer session. Daily lecture for three weeks. Prerequisite, Bot. 20, or equivalent. Given in accordance with demand. Laboratory fee, \$5.00. (Not offered 1964.) A course for county agents and teachers of vocational agriculture. Discussion and denomination of the important diseases in Maryland crops.

## *For Graduates*

### BOT. 221. PLANT VIROLOGY. (3)

First semester. (Not offered 1965-1966.) Two lectures and one laboratory period a week. Prerequisites, Bot. 20 and Bot. 101 or equivalent. Laboratory fee, \$10.00. Consideration of the biological, biochemical and biophysical aspects of plant viruses and virus diseases. (Sisler.)

### BOT. 223. PHYSIOLOGY OF FUNGI. (2)

First semester. Prerequisites, Organic Chemistry and Bot. 101 or the equivalent in bacterial or animal physiology. A study of various aspects of fungal metabolism, nutrition, biochemical transformations, fungal products, and mechanism of fungicidal action. (Sisler.)

### BOT. 224. PHYSIOLOGY OF FUNGI LABORATORY. (1)

First semester. One laboratory period per week. Prerequisite, Bot. 223 or concurrent registration therein. Laboratory fee, \$10.00. Application of equipment and techniques in the study of fungal physiology. (Sisler.)

### BOT. 226. PLANT DISEASE CONTROL. (3)

First semester. (Not offered 1964-1965.) Prerequisite, Bot. 20, or equivalent. An advanced course dealing with the theory and practices of plant disease control. (Bell.)

### BOT. 241. PLANT NEMATOLOGY. (4)

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Botany 20 or permission of instructor. (Not offered 1964-1965.) Laboratory



## ENTOMOLOGY

fee, \$10.00. The study of plant-parasitic nematodes, their morphology, anatomy, taxonomy, genetics, physiology, ecology, host-parasite relations and control. Recent advances in this field will be emphasized. (Krusberg.)

### BOT. 301. SPECIAL PROBLEMS IN BOTANY. (2 or 3)

First and second semester. Credit according to time scheduled and organization of course. Maximum credit toward an advanced degree for the individual student at the discretion of the Department. This course may be organized as a lecture series on a specialized advanced topic, or may consist partly, or entirely, of experimental procedures. It may be taught by visiting lecturers, or by resident staff members. Problems or topics may be in: 1—Physiology; 2—Ecology; 3—Pathology; 4—Mycology; 5—Nematology; 6—Cytology; 7—Cytogenetics; 8—Morphology; 9—Anatomy; or 10—Taxonomy. (Staff.)

### BOT. 302. SEMINAR IN BOTANY. (1)

First and second semesters. Prerequisite, permission of the instructor. Discussion of special topics and current literature in all phases of botany. (Staff.)

### BOT. 399. RESEARCH.

Credit according to work done. A minimum of 6 credit hours is required for the M. S. degree, and an additional minimum of 12 hours is required for the Ph.D. degree. Students must be qualified to pursue with profit the research to be undertaken. (Staff.)

## ENTOMOLOGY

*Professor:* BICKLEY.

*Associate Professor:* JONES.

*Assistant Professors:* ABRAMS, HARRISON AND HAVILAND.

*Lecturer:* SHEPARD.

### ENT. 1. INTRODUCTORY ENTOMOLOGY. (3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, one semester of college zoology. Laboratory fee, \$3.00. The position of insects in the animal kingdom, their gross structure, classification into orders and principal families and the general economic status of insects. A collection of common insects is required.

### ENT. 4. BEEKEEPING. (2)

First semester. A study of the life history, behavior and seasonal activities of the honeybee, its place in pollination of flowers with emphasis on plants of economic importance and bee lore in literature.

### ENT. 20. INSECT PESTS OF AGRICULTURAL CROPS. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, Zool. 1 and Bot. 1. Laboratory fee, \$3.00. The recognition, biology,

## ENTOMOLOGY

and control of insects injurious to fruit and vegetable crops, field crops and stored products.

### ENT. 100. ADVANCED APICULTURE. (3)

Second semester. One lecture and two three-hour laboratory periods a week. Prerequisite, Ent. 4. Laboratory fee, \$3.00. The theory and practice of apiary management. Designed for the student who wishes to keep bees or requires a practical knowledge of bee management. (Abrams.)

### ENT. 105. MEDICAL ENTOMOLOGY. (3)

First semester. Two lectures and one two-hour laboratory period a week. Prerequisite, Ent. 1 or consent of the Department. Laboratory fee, \$3.00. A study of insects and related arthropods that affect the health and comfort of man directly and as vectors of disease. In discussion of the control of such pests the emphasis will be upon community sanitation. (Jones.)

### ENT. 107. INSECTICIDES. (2)

Second semester. Prerequisite, consent of the Department. The development and use of contact and stomach poisons, fumigants and other important chemicals, with reference to their chemistry, toxic action, compatibility, and host injury. Recent research emphasized. (Shepard.)

### ENT. 109. INSECT PHYSIOLOGY. (2)

Second semester. Two lectures and occasional demonstrations. Prerequisite, consent of the Department. The functioning of the insect body with particular reference to blood, circulation, digestion, absorption, excretion, respiration, reflex action and the nervous system, and metabolism. (Jones.)

### ENT. 116. INSECT PESTS OF ORNAMENTALS AND GREENHOUSE PLANTS. (3)

Second semester. Two lectures and one two-hour laboratory period a week. Prerequisites, Bot. 1 and Zool. 1. Laboratory fee, \$3.00. The recognition, biology, and control of insects injurious to plants grown in ornamental plantings, nurseries, and under glass. (Haviland.)

### ENT. 119. INSECT PESTS OF DOMESTIC ANIMALS. (2)

First semester. One lecture and one two-hour laboratory period a week. Prerequisite Ent. 1, or consent of the Department. Laboratory fee, \$3.00. The recognition, biology, and control of insects and related arthropods injurious to horses, cattle, hogs, sheep, goats, and poultry. (Haviland.)

### ENT. 120. INSECT TAXONOMY AND BIOLOGY. (4)

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, Ent. 1. Laboratory fee, \$3.00. Introduction to the principles of systematic entomology and the study of all orders and the important families of insects; immature forms considered. (Bickley.)

### ENT. S121. ENTOMOLOGY FOR SCIENCE TEACHERS. (4)

Summer. Five lectures and five two-hour laboratory periods a week. Laboratory fee, \$3.00. This course will include the elements of morphology, taxonomy and biology of insects using examples commonly available to high school teachers. It will include practice in collecting, preserving, rearing and experimenting with insects insofar as time will permit.

**ENT. 198. SPECIAL PROBLEMS. (1-3)**

First and second semesters. Credit and prerequisites, to be determined by the Department. Investigations of assigned entomological problems. (Staff.)

**ENT. 199. SEMINAR. (1, 1)**

First and second semesters. Prerequisite, senior standing. Presentation of original work, reviews and abstracts of literature. (Staff.)

*For Graduates*

**ENT. 203. ADVANCED INSECT MORPHOLOGY. (3)**

First semester. One lecture and two three-hour laboratory periods a week. Laboratory fee, \$3.00. Insect structure, with special reference to function. Emphasis on internal anatomy. Given in preparation for advanced work in physiology or research in morphology. (Haviland.)

**ENT. 205. INSECT ECOLOGY. (2)**

Second semester. One lecture and one two-hour laboratory period a week. Prerequisite, consent of the Department. Laboratory fee, \$3.00. A study of fundamental factors involved in the relationship of insects to their environment. Emphasis is placed on the insect as a dynamic organism adjusted to its surroundings. (Harrison.)

**ENT. 206. CULICIDOLOGY. (2)**

Second semester, alternate years. One lecture and one three-hour laboratory period a week. Laboratory fee, \$3.00. The classification, distribution, ecology, biology, and control of mosquitoes. (Bickley.)

**ENT. 207. ADVANCED INSECT PHYSIOLOGY. (4)**

Second semester, alternate years. Two lectures and two three-hour laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, one year of Organic Chemistry and Ent. 109 or equivalent. In this course students rear experimental insects, make up reagents and solutions to be used, set up equipment, calibrate it, and make detailed measurements and observations on the functions of selected organ systems. (Jones.)

**ENT. 208. TOXICOLOGY OF INSECTICIDES. (3)**

First semester, alternate years. Three lectures a week. A study of the physical, chemical and biological properties of insecticides. Emphasis is placed on the relationship of chemical structure to insecticidal activity and mode of action. Mechanisms of resistance are also considered. (Staff.)

**ENT. 301. ADVANCED ENTOMOLOGY. (1-6)**

Credit and prerequisites to be determined by the Department. First and second semesters. Studies of minor problems in morphology, taxonomy and applied entomology, with particular reference to the preparation of the student for individual research. (Staff.)

**ENT. 399. RESEARCH.**

First and second semesters. Required of graduate students majoring in entomology. This course involves research on an approved project. A dissertation suitable for publication must be submitted at the conclusion of the studies as a part of the requirement for an advanced degree. (Staff.)

## HORTICULTURE

## HORTICULTURE

*Professors:* HAUT, KRAMER, LINK, SCOTT, SHANKS, STARK AND THOMPSON.

*Associate Professors:* REYNOLDS, AND WILEY.

*Assistant Professor:* SOERGEL.

*Instructors:* BAKER, AND TODD.

### HORT. 5, 6. TREE FRUIT PRODUCTION. (3, 2)

First and second semesters. (Second semester offered in alternate years only, 1965-66.) One or two lectures and one laboratory period a week. Courses must be taken in sequence. Prerequisite, Bot. 1. A study of commercial varieties and principles and practices in fruit production, harvesting and storage. One field trip required.

### HORT. 11. GREENHOUSE MANAGEMENT. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A detailed study of greenhouse construction and management.

### HORT. 16. GARDEN MANAGEMENT. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. The various species of annuals, herbaceous perennials, bulbs, bedding plants, and roses and their cultural requirements.

### HORT. 22. LANDSCAPE GARDENING. (2)

First semester. The theory and general principles of landscape gardening and their application to private and public areas.

### HORT. 56. ELEMENTS OF LANDSCAPE DESIGN. (2)

Second semester. Two laboratory periods per week. A course dealing with basic design in the use of trees, shrubs, evergreens, annual and perennial flowering plants on home properties.

### HORT. 58. VEGETABLE PRODUCTION. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of the principles and practices of commercial vegetable production.

### HORT. 59. BERRY PRODUCTION. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of the principles and practices involved in the production of small fruits including grapes, strawberries, raspberries, blackberries, and cranberries.

### HORT. 61. INTRODUCTION TO FRUIT AND VEGETABLE PROCESSING. (1)

Second semester. Early history and development of the various types of preservation of horticultural crops, such as canning, freezing, dehydration, pickling or brining. The relative importance of these methods on state, national and world-wide bases are emphasized.



## HORT. 62. PLANT PROPAGATION. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of principles and practices of propagation of horticultural plants.

## HORT. 63. FLOWER STORE MANAGEMENT. (3)

Second semester, alternate years. (Offered 1964-65.) Two lectures and one laboratory period a week. Prerequisite, Hort. 11. Laboratory fee, \$5.00. A study of the operation and management of a flower store. Laboratory period devoted to principles and practice of floral arrangements and decoration.

## FOR. 30. ELEMENTS OF FORESTRY. (3)

Second semester, alternate years. (Offered 1965-66.) Two lectures and one two-hour laboratory period per week. Prerequisite, Bot. 1. Not open to freshmen. A general survey of the field of forestry, including timber values, conservation, protection, silviculture, utilization, measurement, engineering, recreation and lumbering. Principles and practices of woodland management.

### *For Advanced Undergraduates*

## HORT. 152. LANDSCAPE DESIGN. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Hort. 22; prerequisite or concurrently, Hort. 107. A consideration of the principles of landscape design and supplemented by direct application in the drafting room.

## HORT. 153. LANDSCAPE DESIGN. (3)

Second semester. Three laboratory periods a week. Prerequisite, Hort. 152. Advanced landscape design.

## HORT. 199. SEMINAR. (1)

First semester. Oral presentation of the results of investigational work by reviewing recent scientific literature in the various phases of horticulture.

(Staff.)

### *For Advanced Undergraduates and Graduates*

## HORT. 101. TECHNOLOGY OF FRUITS. (3)

First semester. (Offered 1964-65.) Prerequisites, Hort. 6, Bot. 101. A critical analysis of research work and application of the principles of plant physiology, chemistry, and botany to practical problems in commercial production.

(Thompson.)

## HORT. 103. TECHNOLOGY OF VEGETABLES. (3)

Second semester. (Offered 1965-66.) Prerequisites, Hort. 58, Bot. 101. For a description of these courses see the general statement under Hort. 101.

(Stark.)

## HORT. 105. TECHNOLOGY OF ORNAMENTALS. (2)

First semester. Prerequisite, Bot. 101. A study of the physiological plant processes as related to the growth, flowering and storage of floriculture and ornamental plants.

(Link.)

## HORTICULTURE

### HORT. 107, 108. WOODY PLANT MATERIALS. (3, 3)

First and second semesters. Prerequisite, Bot. 11. A field and laboratory study of trees, shrubs, and vines used in ornamental plantings. (Baker.)

### HORT. 114. SYSTEMATIC HORTICULTURE. (3)

First semester. Two lectures and one laboratory period a week. A study of the origin, taxonomic relationship and horticultural classification of fruits and vegetables.

### HORT. S115. TRUCK CROP MANAGEMENT. (1)

Summer session only. Primarily designed for teachers and vocational agriculture and extension agents. Special emphasis will be placed upon new and improved methods of production of the leading truck crops. Current problems and their solution will receive special attention.

### HORT. 123. QUALITY CONTROL. (3)

First semester, alternate years. (Offered 1965-66.) Two lectures and one laboratory period a week. Principles involved in the evaluation of factors of quality in horticultural products including appearance, kinesthetic flavor and sanitation factors and statistical presentation of results. (Kramer.)

### HORT. 124. QUALITY CONTROL SYSTEMS. (3)

Second semester, alternate years. (Offered 1965-66.) Two lectures and one laboratory period a week. Prerequisite, Hort. 123. Development of quality control systems designed to maintain specific levels of quality for selected food products. (Kramer.)

### HORT. S124. TREE AND SMALL FRUIT MANAGEMENT. (1)

Summer session only. Primarily designed for vocational agriculture teachers and county agents. Special emphasis will be placed upon new improved commercial methods of production of the leading tree and small fruit crops. Current problems and their solution will receive special attention.

### HORT. S125. ORNAMENTAL HORTICULTURE. (1)

Summer session only. A course designed for teachers of agriculture, home demonstration agents and county agents. Special emphasis will be given to the development of lawns, flowers and shrubbery to beautify homes.

### HORT. 150, 151. COMMERCIAL FLORICULTURE. (3, 3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Hort. 11. Growing and handling bench crops and potted plants, and the marketing of cut flowers. (Link.)

### HORT. 155, 156. FUNDAMENTALS OF FRUIT AND VEGETABLE PROCESSING. (3, 3)

First and second semesters, alternate years. (Offered 1964-65.) Two lectures and one laboratory period a week. Prerequisites, Chem. 32, 34, Hort. 61. Laboratory fee, \$5.00 per semester. The fundamentals of canning, freezing and preserving of horticultural crops with emphasis on the chemical, biochemical and microbiological aspects of processing. (Wiley.)

## HORT. 159. NURSERY MANAGEMENT. (3)

Second semester, alternate years. (Offered 1965-66.) Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 62, 107, 108. A study of all phases of commercial nursery management and operations.

## HORT. 160. ARBORICULTURE. (3)

Second semester, alternate years. (Offered 1964-65.) Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 107 and 108. A study of the planting and maintenance of ornamental shrubs and trees, including basic principles of park, institution and estate maintenance.

## HORT. 161. PHYSIOLOGY OF MATURATION AND STORAGE OF HORTICULTURAL CROPS. (2)

Second semester, alternate years. (Offered 1964-65.) Two lectures a week. Prerequisite, Bot. 101. Factors related to maturation and application of scientific principles to handling and storage of horticultural crops. (Scott.)

## HORT. 198. SPECIAL PROBLEMS. (2, 2) (4 cr. max.)

First and second semesters. Credit arranged according to work done. For major students in horticulture or botany. Four credits maximum per student. (Staff.)

### *For Graduates*

## HORT. 200. EXPERIMENTAL PROCEDURES IN PLANT SCIENCES. (3)

First semester. Prerequisite, permission of instructor. Organization of research projects and presentation of experimental results in the field of biological science. Topics included will be: sources of research financing, project outline preparation, formal progress reports, public and industrial supported research programs, and technical and popular presentation of research data. (Haut, Scott.)

## HORT. 201, 202. EXPERIMENTAL POMOLOGY. (3, 3)

First and second semesters. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in pomology. (Thompson.)

## HORT. 203, 204, 205. EXPERIMENTAL OLERICULTURE. (2, 2, 2)

First semester and in sequence. Prerequisite, Bot. 101, a systematic review of scientific knowledge and practical observation as applied to commercial practices in olericulture. (Stark.)

## HORT. 206. EXPERIMENTAL FLORICULTURE. (3)

First semester. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observation as applied to commercial practices in floriculture. (Link.)

## HORT. 207. METHODS OF HORTICULTURAL RESEARCH. (3)

Second semester. One lecture and one four-hour laboratory period a week. A critical study of research methods which are or may be used in horticulture. (Scott.)

## HORTICULTURE

### HORT. 210. EXPERIMENTAL PROCESSING. (2)

Second semester. Prerequisite, permission of instructor. A systematic review of scientific knowledge and practical observations as applied to commercial practices in processing. (Kramer.)

### HORT. 302. ADVANCED SEMINAR. (1, 1)

First and second semesters. Oral reports with illustrative material are required on special topics or recent research publications in horticulture. Three credit hours maximum allowed toward the M.S. degree or six credits maximum toward the Ph.D. degree. (Staff.)

### HORT. 399. ADVANCED HORTICULTURAL RESEARCH. (2-12)

First and second semesters. Credit granted according to work done. (Staff.)

## THE AGRICULTURAL EXPERIMENT STATION

IRVIN C. HAUT, Ph.D., *Director*

The Agricultural Experiment Station serves Maryland agriculture in much the same manner as research laboratories serve large corporations. Maryland agriculture comprises over thirty thousand individual businesses, and there is neither sufficient capital, nor income so that each one of these can conduct research. Yet the problems which face a biological undertaking such as farming, are as numerous and perplexing as the problems of any business. Certainly our production of food would be much more costly if it were not for the research results that have been obtained by the Agricultural Experiment Station.

The station is a joint federal and state undertaking. Passage of the Hatch Act of 1887, which made available a grant in aid to each state for the purpose of establishing an agricultural experiment station, gave a great impetus to the development of research work in agriculture. This work was further encouraged by the passage of the Adams Act in 1906, the Purnell Act in 1925, the Bankhead-Jones Act in 1935, and the Flannagan-Hope Act of 1946.

The work of the Maryland Agricultural Experiment Station which is supported by these Acts and by state appropriations centers at College Park. On the University campus are to be found laboratories for studying insects and diseases, soil fertility problems, botanical problems, and others. This is also the location of the livestock and dairy barns with their experimental herds. About eight miles from the campus at College Park, near Beltsville, the Plant Research Farm of about 500 acres is devoted to work connected with soil fertility, plant breeding and general crop production problems. An experimental farm near Upper Marlboro is devoted to the problems of tobacco growing and curing. A farm near Salisbury is devoted to solution of the problems of producers of broilers



and of vegetable crops in the southern Eastern Shore area. Two experimental farms are operated near Ellicott City; one is devoted to livestock problems and the other to dairy cattle nutrition and forage research. Also tests of various crop and soil responses are distributed throughout the state. These different locations provide the opportunity to conduct experiments under conditions existing where the results will be put into practice. The solution of many difficult problems in the past has given the Station an excellent standing with farmers of the state.

## AGRICULTURAL EXTENSION SERVICE

EDWARD W. AITON, *Director*

ROY W. CASSELL, *Assistant Director*

Cooperative Extension work in agriculture and home economics, established by state and federal laws in 1914, extends practical agricultural and home information beyond the classrooms of the University of Maryland to young people, farmers, homemakers, and people in businesses relating to agriculture and home economics.

The work of the Cooperative Extension Service is cooperatively financed by the federal, state and county governments. In each county there is a County Agricultural Agent and County Home Demonstration Agent with associates and assistants as funds permit and work require. Backed by a staff of specialists at the University, these agents are in close contact with local people and their problems.

It is conducted under a Memorandum of Understanding between the Cooperative Extension Service of the University and the United States Department of Agriculture. The Cooperative Extension Service is the educational arm in Maryland of the United States Department of Agriculture.

In Maryland, the Cooperative Extension Service works in close association with all rural groups and organizations. In addition to work on the farms and in the farm homes, the Extension program is aimed at the many rural, non-farm, and urban people who service the agricultural industries of the state, including consumers.

In addition to work with adults, thousands of boys and girls are developed as leaders and given practical education in 4-H Clubs and other youth groups. Through their diversified activities, the boys and girls are given a valuable type of instruction and training, and are afforded an opportunity to develop self-confidence, perseverance, citizenship and leadership.

The Cooperative Extension Service in cooperation with the College of Agriculture and the Experiment Station arranges and conducts short

## SERVICE AND CONTROL PROGRAMS

courses in various lines, many of which are held at the University. Some of these courses have been held regularly over a period of years and others are added as the need and demand develop. Short courses have been held in recent years for the following groups: rural women, 4-H Club boys and girls, nurserymen, florists, poultry industry fieldmen, poultry products marketing, beekeepers, greenkeepers, sanitarians, conservation, cow testers, feed manufacturers and distributors, and dairy marketing technicians.

## SERVICE AND CONTROL PROGRAMS

CHARLES P. ELLINGTON, *Director*

The state law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture. Numerous services are performed by technically trained personnel which result in the improvement and maintenance of high standards in the production, processing and distribution of farm products.

In addition the improvement of many control or regulatory activities are authorized by the state law and are carried out by the following agencies responsible to the State Board of Agriculture.

### DAIRY INSPECTION SERVICE

The Maryland Dairy Inspection Law became effective June 1, 1935. However, the present activities of the Dairy Inspection Service are based on Article 43 of the Annotated Code of Maryland (1957 edition), Section 581 through Section 597, of the Laws of Maryland, 1951. The Department of Dairy Science is charged with the administration of the law.

The purposes of the Dairy Inspection Law are as follows: (a) To insure producers who sell milk and cream by measure, weight and butterfat test, that samples, weights, and tests used as the basis of payment for such products are correct; (b) To insure dealers who purchase milk and cream that their agents shall correctly weigh, sample, and test these products; (c) To insure correctness of tests made for official inspections or for public record. To achieve these purposes the law requires the licensing of all dealers who purchase milk and cream from producers, whether the purchases are by measure, weight, or test, and the licensing of all persons sampling, weighing and testing milk and cream when the results of such samples, weights, and tests are to serve as a basis of payment to producers.

Duties of the Dairy Inspection Service, resulting from enforcement of the Inspection Law, deal with the calibration of that glassware used in

## SERVICE AND CONTROL PROGRAMS

testing milk and cream and the rejection of inaccurate items; examination of all weighers, samplers, and testers and the issuance of licenses to those satisfactorily passing the examination; and inspection of the pertinent activities of weighers, samplers, testers and dairy plants.

## DEPARTMENT OF MARKETS

All of the activities of the Department of Markets are geared to the importance in modern agriculture of the problems of marketing farm products. The Department endeavors to serve the every-day needs of the farmer in marketing his products and to insure a fair and equitable treatment of the farmer in all dealings which he may have concerning the marketing of his products. In the performance of these responsibilities, the Department carries out programs in extension marketing, conducts market surveys, compiles and disseminates marketing information and market data, operates a market news service, provides an agricultural inspection and grading service, maintains a consumer information service and enforces and interprets the agricultural marketing laws of the state. The regulatory aspects of the Department's functions are carried out as the agent of the State Board of Agriculture under the authority of various state laws relating to the marketing of farm products. A close working relationship is maintained with other specialists in the Extension Service, all departments of the Agricultural Marketing Service, the Maryland Crop Reporting Service, and the Agricultural Marketing Service of the United States Department of Agriculture. The voluntary and dynamic cooperation of the personnel in these various activities brings to bear on agricultural marketing problems an effective combination of research, education, and service.

The passage of the Federal Agricultural Research and Marketing Act gave additional impetus to the study and solution of agriculture's marketing problems. The Department of Markets is largely responsible for developing the state program under Title II of this act.

Information and assistance in all phases of marketing is available to all interested persons. When a sufficient number of individuals are interested, marketing specialists hold meetings and demonstrations in local communities. Field offices are located in Baltimore, Salisbury, Hancock and Pocomoke. Department headquarters is at the University of Maryland, College Park, Maryland.

## MARYLAND LIVE STOCK SANITARY SERVICE

The Live Stock Sanitary Service is organized under the State Board of Agriculture and is charged with the responsibility of preventing the introduction of diseases of animals and poultry from outside of the state and with control and eradication of such diseases within the state. The service is further charged with the responsibility of cooperating with the State Department of Health in the suppression of diseases of animals and poultry which affect the public health.



## SERVICE AND CONTROL PROGRAMS

Control projects in bovine tuberculosis, Johne's disease, and bovine brucellosis are conducted in cooperation with the Agricultural Research Service of the United States Department of Agriculture. The field force of state employed veterinarians is augmented by a number of federal veterinarians in the conduct of these control programs. The control of swine brucellosis, pullorum disease in poultry, rabies, and many other disease conditions is conducted by the state without outside assistance.

Facilities for the diagnosis of a wide variety of diseases are furnished in the main laboratory at College Park and in the branch laboratories at Salisbury, Centreville, Bel Air, Frederick, Hagerstown, Oakland and Preston.

## SEED INSPECTION SERVICE

The Seed Inspection Service administers the state seed law; inspects seeds sold throughout the state; collects seed samples for laboratory examination; reports the results of the examinations to the parties concerned; publishes summaries of these reports which show the relative reliability of the label information supplied by wholesale seedsmen; cleans and treats tobacco seed intended for planting in the state; makes analyses, tests, and examinations of seed samples submitted to the laboratory; and advises seed users regarding the economic and intelligent use of seeds. The Service also cooperates with the Agricultural Marketing Service of the United States Department of Agriculture in the enforcement of the Federal Seed Act in Maryland.

The work of the Seed Inspection Service is not restricted to the enforcement of the seed law however, for state citizens may submit seed samples to the laboratory for analysis, test or examination. Specific information regarding suitability for planting purposes of lots of seeds is thus made available to individuals without charge. The growth of this service has been steady since the establishment of the laboratory in 1912. Most Maryland citizens, city and country, are directly interested in seeds for planting in flower beds, lawns, gardens, or fields.

## STATE HORTICULTURAL DEPARTMENT

In 1896 the subject of nursery inspection was given consideration under Article 48, of the Code of Public General Laws, under the title "Inspection" as designated by Chapter 290 of the "Acts of the General Assembly of Maryland of 1896." In 1898 certain sections of Article 48 were repealed and re-enacted with amendments, under a new sub-title, "State Horticultural Department," and eight new sections were added thereto. In 1916 the sections were again re-enacted with such changes in the wording as were necessary to bring them into conformity with the reorganization of the Maryland State College of Agriculture and Experiment Station and its Board of Trustees. Subsequently all regulatory functions including newly enacted Articles in regard to the bee diseases, mosquitoes,



## SERVICE AND CONTROL PROGRAMS

and aerial spraying, were transferred to the State Board of Agriculture under Chapter 391 of the "Acts of the General Assembly."

Work in this field is designed to control insects and plant diseases and to protect the public in the purchase of products of nurserymen and florists. A considerable part of the time of the staff is occupied by inspection of orchards, crops, nurseries, greenhouses, and floral establishments. Cooperation with the federal government in the inspection and certification of materials that come under quarantine regulations is another major function of the Department. The Department enforces the provisions of the Apiary Law, including inspection of apiaries. This service includes control and eradication of diseases of strawberries and other small fruits, diseases of apples, peaches, etc., inspection and certification of potatoes and sweet potatoes for seed, control of white pine blister rust, Dutch elm diseases, etc.

## STATE DEPARTMENT OF DRAINAGE

The State Department of Drainage was established in 1937. Its duties are to promote and encourage the drainage of agricultural lands in the state, to correlate the activities of the local drainage organizations in the state and to cooperate with state and federal agencies in the interest of a permanent program of improved drainage.

## STATE INSPECTION SERVICE

### *Feeds, Fertilizer, Agricultural Liming Materials and Pesticides*

The protection of consumers and ethical manufacturers of agricultural products against fraudulent practices, makes certain specialized statutes necessary. These laws are classified as correct labeling acts, and are enforced by the State Inspection Service. Included in this legislation are the State Feed, Fertilizer, Agricultural Liming Materials, and Pesticide Laws.

Work of enforcing these laws is divided into five distinct phases: First, the commodities concerned must be registered under acceptable brand names, and with proper labels; second, official samples must be collected by the Department's inspectors from all parts of the state; third, chemical and physical examinations must be made to establish that professed standards of quality are being met; fourth, results must be assembled and published in concise and understandable form, with the reports made available to all interested persons; and fifth, the prosecution of those responsible for flagrant violations.

Hundreds of tests also are made annually on feed, fertilizer, and lime samples submitted by state purchasers. No charge is made for this service.

Throughout its existence, this Department has cooperated with comparable federal agencies in every possible way. In this activity it has attained

## SERVICE AND CONTROL PROGRAMS

not only state-wide, but also a nationally recognized reputation for accuracy, timeliness, and unbiased fair treatment of the consumer and manufacturer alike.

The facilities of the Department are at all times available to supply the manufacturer with technical advice, and to safeguard him from unfair competition.

For its entire program of service and protection, the Department relies in large measure upon education, from the standpoint of both buyer and seller. However, in those rare instances when this policy is unheeded, backing by the courts, both federal and state, can be depended upon for enforcement assistance.

# THE 1964-66 FACULTY

## *Administrative Officers*

CAIRNS, Gordon M., Dean of Agriculture and Professor of Dairy Husbandry  
B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.

POFFENBERGER, Paul R., Assistant Dean-Instruction, and Professor of Agricultural Economics

B.S., University of Maryland, 1935; M.S., 1937; Ph.D., American University, 1953.

HAUT, Irvin C., Director of Experiment Station and Professor of Horticulture  
B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

AITON, Edward W., Director of Extension

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The provisions of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

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# UNIVERSITY CALENDAR, 1963-64

## *Fall Semester 1963*

September 16-20	Monday-Friday	Fall Semester Registration
September 23	Monday	Instruction Begins
November 27	Wednesday	Thanksgiving Recess Begins After Last Class
December 1	Monday	Thanksgiving Recess Ends 8 a.m.
December 20	Friday	Christmas Recess Begins After Last Class

## *1964*

January 6	Monday	Christmas Recess Ends 8 a.m.
January 22	Wednesday	Pre-Examination Study Day
January 23-30	Thursday-Wednesday inclusive	Fall Semester Examinations

## *Spring Semester*

February 3-7	Monday-Friday	Spring Semester Registration
February 10	Monday	Instruction Begins
February 22	Saturday	Washington's Birthday, Holiday
March 25	Wednesday	Maryland Day, not a holiday
March 26	Thursday	Easter Recess Begins After Last Class
March 31	Tuesday	Easter Recess Ends, 8 a.m.
May 13	Wednesday	AFROTC Day
May 28	Thursday	Pre-Examination Study Day
May 29-June 5	Friday-Friday	Spring Semester Examinations
May 30	Saturday	Memorial Day, Holiday
May 31	Sunday	Baccalaureate Exercises
June 6	Saturday	Commencement Exercises

## *Summer Session 1964*

June 22	Monday	Summer Session Registration
June 23	Tuesday	Summer Session Begins
July 4	Saturday	Independence Day, Holiday
August 14	Friday	Summer Session Ends

## *Short Courses 1964*

June 15-19	Monday-Saturday	Rural Women's Short Course
August 3-7	Monday-Saturday	4-H Club Week
September 8-11	Tuesday-Friday	Firemen's Short Course

# UNIVERSITY CALENDAR, 1964-65

(Tentative)

## *Fall Semester 1964*

September 14-18	Monday-Friday
September 21	Monday
November 25	Wednesday
November 30	Monday
December 22	Tuesday

Fall Semester Registration  
Instruction Begins  
Thanksgiving Recess Begins  
After Last Class  
Thanksgiving Recess Ends  
8 a.m.  
Christmas Recess Begins After  
Last Class

## *1965*

January 4	Monday
January 20	Wednesday
January 21-27	Thursday-Wednesday

Christmas Recess Ends 8 a.m.  
Pre-Examination Study Day  
Fall Semester Examinations

## *Spring Semester*

February 2-5	Tuesday-Friday
February 8	Monday
February 22	Monday
March 25	Thursday
April 15	Thursday
April 20	Tuesday
May 12	Wednesday
May 27	Thursday
May 28-June 4	Friday-Friday
May 30	Sunday
May 31	Monday
June 5	Saturday

Spring Semester Registration  
Instruction Begins  
Washington's Birthday, Holiday  
Maryland Day, not a Holiday  
Easter Recess Begins After Last  
Class  
Easter Recess Ends 8 a.m.  
AFROTC Day  
Pre-Examination Study Day  
Spring Semester Examinations  
Baccalaureate Exercises  
Memorial Day, Holiday  
Commencement Exercises

## *Summer Session*

June 21	Monday
June 22	Tuesday
July 5	Monday
August 13	Friday

Summer Session Registration  
Summer Session Begins  
Independence Day, Holiday  
Summer Session Ends

## *Short Courses*

June 14-18	Monday-Friday
August 2-6	Monday-Friday
September 7-10	Tuesday-Friday

Rural Women's Short Course  
4-H Club Week  
Firemen's Short Course

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# THE COLLEGE

## GENERAL INFORMATION

The College of Arts and Sciences offers its students a liberal education. It seeks to develop graduates who can deal intelligently with the problems which confront them and whose general education will be a continuing source not only of material profit but of genuine personal satisfaction. It also offers each student the opportunity to concentrate in the field of his choice; this element of depth serves both as an integral part of his education and as a foundation for further professional training or pursuits.

Students in other colleges of the University are offered training in fundamental courses that serve as a background for their professional education.

## HISTORY

This college is an outgrowth of the Division of Language and Literature and the Division of Applied Science and the later School of Liberal Arts of Maryland State College. In 1921 the School of Liberal Arts and the School of Chemistry were combined and other physical and biological sciences were brought into the newly formed College of Arts and Sciences. In later reorganizations some departments have been added and some transferred to the administrative control of other colleges.

## APPLICATION INFORMATION

### *Fall Semester*

All applications for full-time undergraduate admission for the Fall Semester at the College Park campus must be received by the University on or before July 15. Any student registering for seven (7) or more semester hours of work is considered a full-time student.

Under unusual circumstances, applications will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$15.00 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10.00 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission must be received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

## GENERAL INFORMATION

### *Spring Semester*

The deadline for the receipt of applications for the Spring Semester is January 1.

### *University College*

The application deadlines and fees *do not* apply to students registering in the evening classes offered by the University College.

### *Graduate School*

Application for admission to the Graduate School must be made by September 1 for the fall term and by January 1 for the spring term on blanks obtained from the Office of the Graduate School. Admission to the summer session is governed by the date listed in the Summer School catalog. The summer session deadline date is generally June 1.

## REQUIREMENTS FOR ADMISSION

The requirements for admission to the College of Arts and Sciences are, in general, the same as those for admission to the other colleges and schools of the University. Application must be made to the Director of Admissions, University of Maryland, College Park, Maryland.

The student who intends to pursue a program of study in the College of Arts and Sciences should include the following subjects in his high school program: English, 4 units; college preparatory mathematics (algebra, plane geometry), 3 or 4 units; foreign language, 2 or more units; biology, chemistry, or physics, 2 units; history and social sciences, 1 or more units.

The student who wishes to major in chemistry, mathematics, physics, botany, microbiology, zoology, or who wishes to follow a pre-medical or pre-dental program, should include 4 units of college preparatory mathematics (algebra, plane geometry, trigonometry, and more advanced mathematics, if available). He should also include chemistry and physics.

A complete statement of admission requirements and policies will be found in the publication entitled *An Adventure in Learning*. A copy may be obtained by writing to the Catalog Mailing Office, North Administration Building, University of Maryland, College Park, Maryland.

## COSTS

Actual annual costs of attending the University include: \$250.00 fixed charges; \$96.00 special fees; \$420.00 board; \$290.00 to \$320.00 lodging for Maryland residents, or \$340.00 to \$370.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new registrants. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. A charge of

\$400.00 is assessed students who are non-residents of the State of Maryland.

*An Adventure in Learning*, the undergraduate catalog of the University, contains a detailed statement of fees and expenses and includes changes in fees as they occur. A copy may be requested from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park.

## DEGREES

The degree conferred on students who have met the requirements prescribed by the College of Arts and Sciences are Bachelor of Arts, Bachelor of Science, and Bachelor of Music.

Students of this College who complete satisfactorily curricula with majors in departments of the humanities or social sciences are awarded the degree of Bachelor of Arts.<sup>1</sup> Those who complete satisfactorily curricula with majors in the department of Mathematics or the biological and physical sciences are awarded the degree of Bachelor of Science.<sup>2</sup> Those who complete satisfactorily a special professional program in the Department of Music are awarded the degree of Bachelor of Music.

Students who complete satisfactorily the prescribed combined program of Arts and Sciences and Medicine or of Arts and Sciences and Dentistry, will be granted the degree of Bachelor of Sciences. Students who complete satisfactorily the prescribed combined program of Arts and Sciences and Law will be granted the degree of Bachelor of Arts.

## RESIDENCE

The last thirty semester hours credit of any curriculum leading to a baccalaureate degree in the College of Arts and Sciences must be taken in residence in this University.

Students working for one of the combined degrees must earn the last 30 semester hours credit of the arts program in residence in the College of Arts and Sciences, College Park.

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<sup>1</sup>The Departments of Economics, Geography, and Government and Politics, although administratively in the College of Business and Public Administration, offer courses for Arts and Sciences students. Majors may be elected in these departments as in those of the other Departments of the Division of Social Sciences which are administered by the College of Arts and Sciences.

<sup>2</sup>The Department of Botany, although administered by the College of Agriculture, offers courses for Arts and Sciences students. A major may be elected in this department as in those of the other departments of the Division of Biological Sciences administered by the College of Arts and Sciences.

## GENERAL INFORMATION, ACADEMIC INFORMATION

The complete statement of this requirement may be found in the University publication, *University General and Academic Regulations*.

### FOR ADDITIONAL INFORMATION

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

## ACADEMIC INFORMATION

### GENERAL REQUIREMENTS FOR DEGREES

The baccalaureate degree from the College of Arts and Sciences may be conferred upon a student who has satisfied the following requirements:

1. University requirements.
2. College of Arts and Sciences requirements.

A minimum of 120 semester hours credit in academic subjects other than Basic Air Science is required for a bachelor's degree. Men must acquire in addition 4 semester hours in Basic Air Science, and 4 semester hours in physical activities. Women must acquire in addition 4 semester hours in health and 4 semester hours in physical activities.



## THE PROGRAM IN AMERICAN CIVILIZATION

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American Civilization. This program is also designed to provide the student with a general educational background.

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American civilization are as follows:

1. English (12 hours, Eng. 1, 2, and 3, 4), American history (6 hours, H. 5, 6), and American government (3 hours, G. & P. 1) are required subjects; however, students who qualify in one, two, or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours remaining an absolute requirement), 3 hours of history (3 hours remaining as an absolute requirement), and 3 hours of American government. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take one lower-division history course instead of H. 5 and 6. Students who have been exempted from courses in English, American history, or American government may not take such courses for credit.

*Special note for foreign students:*

The foreign student is required to take a special classification test in English before registering for the required English courses. He may be required to take Foreign Language 1 and 2—English for Foreign Students—*before* registering for English 1.

The foreign student may meet the foreign language requirement by taking additional courses in English as stated below under the foreign language requirement.

The foreign student should register for Speech 3, *Fundamentals of General American Speech*, rather than for the speech course normally required in his curriculum.

2. For the additional hours of the 24 hours required the student elects one course from the following group (Elective Group I):

Econ. 37—Fundamentals of Economics (not open to freshmen; students who may wish to take additional courses in economics should substitute Econ. 31 for Econ. 37).

## ACADEMIC INFORMATION

Phil. I—Philosophy for Modern Man.

Psych. I—Introduction to Psychology.

Soc. I—Sociology of American Life.

3. Students who, on the basis of tests, have been released from 3, 6 or 9 hours in otherwise required courses in English, American history, or American government (see I above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced courses in the same department as the required courses in which the student is excused, or (b) Elective Group I (see 2 above) provided that the same course may not be used as both a Group I and a Group II choice, or (c) Elective Group II. Group II consists of the following 3-hour courses:

H. 42—Western Civilization; either H. 51 or 52—The Humanities; either Music 20—Survey of Music Literature or Art 22—History of American Art; and Soc. 5—Anthropology.

Courses taken to fulfill the requirements in American civilization or the ROTC option may not be used towards major or minor requirements.

## AIR SCIENCE, PHYSICAL EDUCATION AND HEALTH

1. Basic Air Science for men—four semester hours. Required freshman year.
2. Health for women—four semester hours. Required freshman year.
3. Physical Activities for men and women—four semester hours. Required freshman and sophomore years.

All male students, unless specifically exempted under University regulations, are required to take Basic Air Science training for a period of two semesters. The successful completion of this sequence is a prerequisite for graduation and it must be taken by all eligible students during the first two semesters of attendance at the University. Transfer students who have not fulfilled this requirement will complete the sequence or take it until graduation, whichever occurs first.

Selected students who wish to do so may, with proper approval, carry as electives during their junior and senior years Advanced Air Science courses which lead to a regular or reserve commission in the United States Air Force.

For further details concerning air science refer to *University General and Academic Regulations*, a publication available to all entering undergraduate students.

## COLLEGE REQUIREMENTS

1. Foreign Language—twelve semester hours in a classical language or the following option in a modern foreign language:

a. Students who begin a modern foreign language in the University must successfully complete the study of that language in any authorized sequence, through Course 7 in all languages or Course 8 in German.

b. Those who continue in the University a language studied for two or more years in secondary school may choose, in French, German, or Spanish, between enrollment in Course 5 or the taking of a placement examination (students beginning in Courses 5, 6, or 7 must continue in any authorized sequence through Course 7 plus three additional hours; those beginning a course higher than Course 7 must take a total of six hours in the appropriate courses). In languages other than French, German, or Spanish (i.e., languages which do not have a Course 5), all students must take a placement examination.

The languages which may be offered to meet this requirement are Chinese, French, German, Greek, Hebrew, Italian, Latin, Russian and Spanish.

German 9 may not be taken to meet the college requirement of 12 hours of language unless the student has finished German 7 or German 8. Students who wish to offer a foreign language not included in this list should consult the Head of the Foreign Language Department for a recommendation to the Dean.

Foreign students may satisfy this requirement by offering twelve hours of English in addition to the regular English requirement. The special course in English for foreign students (Foreign Language 1, 2) may be included in the additional hours of English. This option may not be used by pre-medical students.

A foreign student may not meet the foreign language requirement by taking freshman or sophomore courses in his native language.

2. Natural science and mathematics—twelve semester hours, unless otherwise specified. Candidates for the A.B. degree must demonstrate eligibility to take Math. 10 or must complete satisfactorily Math. 3. The science courses elected require the approval of the Dean; they will be selected from the Departments of Botany, Chemistry, Entomology, Geology, Microbiology, Physics and Astronomy, Zoology. At least one course must include laboratory experience and one course must be elected in each of the Divisions of Biological and Physical Sciences except in the case of students whose science courses are specifically prescribed in their curricula.

3. Speech—two or three semester hours in accordance with the particular curriculum.

4. Major and minor requirements—During his sophomore year, each student should choose a field of concentration (major). He may make this choice as early as he wishes; however, once he has earned 56 hours of acceptable credit he *must* choose a major before his next registration.



## ACADEMIC INFORMATION

In the programs leading to the A.B. degree, the student must also have a secondary field of concentration (minor). The courses constituting the major and the minor must conform to the requirements of the department in which the major work is done.

The student must have an average of not less than "C" in the introductory courses in the field in which he intends to major.

A major shall consist, in addition to the underclass departmental requirements, of 24-40 hours, of which at least twelve must be in courses numbered 100 or above, and at least twelve of which must be taken in the University of Maryland.

A minor in programs leading to the A.B. degree shall consist of a coherent group of courses totaling 18 semester hours in addition to the requirements listed above. At least six of the 18 hours must be in a single department in courses numbered 100 or above. The courses comprising the minor must be chosen with the approval of the major department.

No minor is required in programs leading to the B.S. degree, but the student must take such supporting courses in science or other fields as are required by his major department.

The average grade of the work taken for the major must be at least "C;" some departments will count toward satisfaction of the major requirement no course completed with a grade of less than "C." The average grade of the work taken in the major and minor combined must be at least "C." A general average of "C" in courses taken at the University of Maryland is required for graduation.

## JUNIOR REQUIREMENTS

To attain junior standing, a student must acquire a minimum of 56 academic semester hours with an average grade of at least "C" in the freshman and sophomore years. See *University General and Academic Regulations* for full statement of rules pertaining to junior standing.

The last thirty hours of a student's academic work must be taken at the University of Maryland subject to the provision stated in *University General and Academic Regulations*.

## NORMAL LOAD

The normal load for students in this college is 15 semester hours credit per semester, exclusive of the required work in physical activities, air science, and health.

A student must have the approval of his adviser and dean to take more than the normal program prescribed in his curriculum.



## ADVISERS

Each freshman in this college will be assigned to a faculty adviser who will help the student, during his first year, to select his courses and to determine what his field of major concentration should be.

The student at the sophomore level and above will be advised by a faculty member in his major department. Students following the three-year programs in dentistry, law, and medicine will be advised by the special advisers for these programs.

## ELECTIVES IN OTHER COLLEGES AND SCHOOLS

A limited number of courses taken in other colleges and schools of the University may be counted for elective or minor credit toward a degree in the College of Arts and Sciences.

The number of credits which may be accepted from the various colleges and schools is as follows: College of Education—24; all other colleges—20. The combined credits from the colleges and schools shall not exceed 20 (or 24 if courses in education are included). Schools of Dentistry, Law, and Medicine—in combined degree programs the first year of professional work must be completed.

## CERTIFICATION OF HIGH SCHOOL TEACHERS

If courses are properly chosen in the field of education, a prospective high school teacher can prepare for high school positions, with a major and minor in one of the departments of this College. A student who wishes to work for a teacher's certificate must consult his adviser before the junior year.

## SPECIAL HONORS

1. A program of reading for special honors in literature is open to undergraduates in any college of the University who have the approval of their dean and of the Head of the Department of English. Candidates are examined on an approved list of literary works including translations from foreign languages. Application may be made to the Head of the Department of English at any time before the beginning of the junior year.

2. The Honors Program of the College is made up of the Departmental Honors Programs. Its general aim shall be to encourage and recognize superior scholarship. Its more particular aim shall be to provide qualified students with a maximum opportunity for intensive and often independent study to the end of achieving integration and depth in their major fields of study. The Honors Program of each department is set up and administered by the Departmental Honors Committee. The College Committee on Honors Programs acts as an advisory and regulatory body. Admission

## GENERAL A.B. CURRICULUM

to the Program shall ordinarily be at the beginning of the first or second semester of the student's junior year. As a general rule only students with a cumulative grade point average of 3.0 will be admitted. Students admitted to the program enjoy some academic privileges. A comprehensive examination over the field of his major program is given to candidates near the end of their senior year. On the basis of the student's performance on the Final Honors Comprehensive Examination and in meeting such other requirements as may be set by the Department Honors Committee, the faculty may vote to recommend the candidate for the appropriate degree (A.B., B.M., or B.S.) without departmental honors; for the appropriate degree with (departmental) *Honors*; or for the appropriate degree with (departmental) *High Honors*. Successful candidacy will be symbolized by appropriate announcement in the Commencement Program and by citation on the student's academic record and diploma.

## The General A.B. Curriculum

The following curriculum gives the subjects required of students planning to major in one of the departments of the Divisions of Humanities or Social Studies. Since most departmental majors require prerequisites which should be taken during the first two years, individual programs must be prepared in consultation with the assigned adviser; the elective hours listed may be used for this purpose.

	Semester	
	I	II
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	3	3
G. & P. 1—American Government or Group I elective <sup>1</sup> .....	3	..
Group I elective or G. & P. 1 <sup>1</sup> .....	..	3
Foreign Language <sup>2</sup> .....	3	3
Mathematics or Natural Science.....	4	4
Speech 1—Public Speaking; elective.....	3	3
A. S. 2, 3—Basic Air Science (men).....	2	2
Hea. 2, 4—Health (women).....	2	2
Physical Activities.....	1	1
Total.....	19	19
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature <sup>1</sup> .....	3	3
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Foreign Language (continued).....	3	3
Natural Science or Mathematics; elective.....	4	3
Elective.....	3	3
Physical Activities.....	1	1
Total.....	17	16

<sup>1</sup> See The Program in American Civilization on pages 5-6.

<sup>2</sup> A placement test is given during registration week for students wishing to pursue a language they have studied in high school.

## I. AMERICAN STUDIES

The University has a comprehensive program in American Studies. It begins with required courses on the freshman and sophomore level, includes a major for juniors and seniors, and also provides for graduate work on the M.A. and Ph.D. level. (For information concerning the graduate program, see the Graduate School Catalog.)

The student who majors in American Studies has the advantage of being taught by cooperating specialists from various departments. The committee in charge of the program represents the Departments of English, History, Government and Politics, and Sociology. Members of the Committee serve as official advisers to students electing to work in the field.

The program is intended to have generous breadth, but the danger of securing breadth without depth is offset by the requirement of an area of concentration. American Studies are supplemented by studies in source cultures and interacting cultures; however in planning a curriculum, students are required to concentrate in one of the four departments primarily concerned with the program. The program must include at least 42 semester hours of work from the departments participating in the program. These credits constitute collectively a major and a minor. At least 20 of these 42 hours of advanced work must be in 100-level courses. All the advanced work should be so distributed that the student will take at least 9 hours in each of three out of the four cooperating departments, including, of course, the department of his concentration.

In his senior year, each major student is required to take a conference course (American Studies 137, 138) in which the study of American civilization is brought to a focus. During the course, the student analyzes eight or ten important books which reveal fundamental patterns in American life and thought and receives incidental training in bibliographical matters, in formulating problems for special investigation, and in group discussion.

Freshmen who are interested in this program should consult with their Lower Division adviser. Upperclassmen should consult with the Executive Secretary of the American Studies curriculum, Associate Professor Beall.

Suggested sample curriculum for American Studies majors:

Junior year: H. 52—The Humanities (3); H. 105 and 106—Social & Economic History of the United States (3, 3); Eng. 150 and 151—American Literature (3, 3); G. & P. 144—American Political Theory (3); Phil. 105—Philosophy in America (3); Electives (9).

Senior year: American Studies 137 and 138—Conference course in American Studies (3, 3); G. & P. 174—Political Parties (3); Phil. 154—



## THE HUMANITIES CURRICULUMS

Political and Social Philosophy (3); Soc. 105—Cultural Anthropology (3); Soc. 125—Cultural History of the Negro (3); H. 133 and 134—History of Ideas in America (3, 3); Electives (6).

## II. THE HUMANITIES

### *Art*

Two types of majors are offered in art: Art Major A for those who take the art curriculum as a cultural subject and as preparation for a career for which art is a necessary background; Art Major B for those who prepare themselves for creative work on a professional basis.

In both types the student begins with the basic courses, and moves to more advanced study of the theory of design and of the general principles involved in visual expression. A large amount of study takes the form of actual practice of drawing and painting. The student, in this way, gains a knowledge of the vocabulary of drawing and painting, and of the methods and procedures underlying good quality of performance.

Art Major B emphasizes the development of craftsmanship and the creative faculty. Art Major A, while including the basic studio courses, necessarily places emphasis on general history, composition, and art appreciation, with subsequent choices of special epochs for greater detailed study.

Art history and art appreciation are of special interest to students majoring in English, history, languages, philosophy, or music. It is suggested that they schedule Art 9, 11, and 22, History of Art, and History of American Art, as excellent supplementary study for a fuller understanding of their major. Art 20 is recommended for English, languages, philosophy, home economics, and education majors. Art 22, History of American Art, is advised for majors in the American civilization courses. Home economics and horticulture majors are encouraged to schedule basic art courses as a useful means of training observation and developing understanding of, and proficiency in, the visual arts.

Courses required in all art majors: Art 1—Basic Drawing (3); Art 5—Basic Design (3); Art 9, 11—History of Art (3, 3); Art 20—Art Appreciation (2).

Courses required in cultural art major: Art 22—History of American Art (3).

Courses required in creative art major: Art 7—Landscape Painting (3). The Department of Art reserves the right to retain any work of students for the permanent collection of the University.



*Classical Languages and Literatures*

No placement tests are given in the Classical Languages. For details on registration for Latin and Greek, see preliminary paragraph at head of course listings below in this catalog.

**MAJOR IN LATIN:** Latin 1, 2, 3, and 4 or their equivalent must have been completed before a student may begin work on a major in Latin. A student majoring in Latin will then begin his concentration with Latin 5. A major consists of a minimum of twenty-four hours beginning with Latin 5, twelve hours of which must be taken in 100-level courses. A major student who has taken Latin 1, 2, 3, and 4 may use credit so obtained to fulfill the twelve-hour foreign language requirement of the College of Arts and Sciences. Those registering initially for Latin 5 must fulfill this requirement in another foreign language, preferably Greek.

*Comparative Literature*

All literature courses numbered 100 or above in the departments of Classics, Foreign Language and English as well as courses in Comparative Literature are accepted for a major in comparative literature. Students with this major must have a knowledge of at least one approved foreign language demonstrated by successful completion of a course numbered 100 or above in that language.

Of the possible 24-40 hours offered as a major, the following courses are required:

Comparative Literature 101-102 and 150.

Six hours of other comparative literature courses.

Course work may not be limited to the nineteenth and twentieth centuries. Latin 70 is highly recommended. Comparative literature courses may be counted toward a major or minor in English.

*English*

Students majoring in English, particularly those who plan to do graduate work, are urged to take work in a foreign language in addition to that required for graduation. In selecting minor or elective subjects, it is recommended that the students give special consideration to the following: Latin, Greek, French, German, philosophy, history, and fine arts.

Students who major in English must choose 24 hours of the possible 24-40 hours required of a major from courses in several groups, as follows:

1. Three hours in language (Eng. 8, 101, 102, 104, 107).
2. Six hours in major figures (Eng. 104, 115, 116, 121).

## THE HUMANITIES CURRICULUMS

3. Nine hours in survey or type courses (six hours from Eng. 110, 111, 112, 113, 120, 122, 123, 125, 126, 129, 130, 134, 135; 55 or 56; three hours from Eng. 139, 140, 141, 143, 144, 145, 157).
4. Six hours in American literature (Eng. 148, 150, 151, 152, 155, 156).

To be eligible for a degree, the candidate must have a "C" average in courses in these groups.

HONORS: Eligible students should consult a departmental adviser not later than the sophomore year.

### *Foreign Languages and Literatures*

In French, German, and Spanish the underclass prerequisites, which must be satisfied before a student can begin work toward a major, are the courses numbered 1, 2, 6, 7, and 11 (or 9 in German), except that highly qualified students in 7 (or also 8 in German) may bypass 11 (or 9 in German), and except that first-term juniors may be permitted to take 11 (or 9 in German) concurrently with 75. In Russian, the underclass prerequisites are Russian 1, 2, 6, and 7.

Two types of majors are offered in French, German, or Spanish, one for the general student or the future teacher, and the other for those interested in a rounded study of a foreign area for the purpose of understanding another nation through its literature, history, sociology, economics, and other aspects.

LITERATURE AND LANGUAGE MAJOR: Language and literature are stressed in this type of major. Specific minimum requirements in the program for a major in French, German, or Spanish are: three semester courses in advanced language (two to be selected from courses numbered 12, 80, 81 and one from courses numbered 103, 104); two semesters of the survey of literature (courses numbered 75, 76, or 77, 78); four semester courses selected from literature courses numbered 100 or above; and Comparative Literature 101 and 102—a total of 33 hours. Requirements for a major in Russian comprise three semesters of advanced language, as follows: Russian 12 or 13; Russian 71 or 72; Russian 80 or 81. Also, two semesters of the survey of literature, Russian 75 and 76; four semesters in 100-level courses; and Comparative Literature 101, 102—a total of 33 hours. Beyond this minimum, further courses in the Department are desirable and, as electives, work in American and Comparative Literature is strongly recommended. In all language programs, including the Foreign Area Major, the Head of Department has authority to relieve a student of the requirement in Comparative Literature 101 and 102.

FOREIGN AREA MAJOR: The area study major in French, German or Spanish endeavors to provide the student with a knowledge of various aspects of

the country whose language he is studying. Specific minimum requirements in the program for this major are: five semester courses in advanced language (courses numbered 12, 71, 72, 80, 81); two semester courses in civilization (courses numbered 171, 172 or 173, 174); two semester courses selected from literature courses numbered 100 or above; and Comparative Literature 101 and 102—a total of 33 hours. The student takes, as a minor, 18 hours in geography, history, political science, sociology, economics, or other human science courses, distributed through these fields, in consultation with advisers in the Foreign Language Department.

**HONORS IN FRENCH, GERMAN OR SPANISH:** A student whose major is in French, German or Spanish and who, at the time of application, has a general academic average of 3.0 and of 3.5 in his major field, may apply to the Head of the Foreign Language Department for admission to the Honors Program. Honors work normally begins in the first semester of the junior year, but a student may enter in the second semester of the junior year. Honors students are required to take two courses from those numbered 195, 196, 197 and the seminar numbered 199, as well as meeting other requirements for a major in Foreign Languages. There will be a final comprehensive examination, covering an honors reading list, which must be taken by all graduating seniors who are candidates for honors. Admission of students to the Honors Program, their continuance in the program, and the final award of honors are the prerogative of the Departmental Honors Committee.

### *Music*

The functions of the Department are (1) to help the general student develop sound critical judgment and discriminating taste in the art of music; (2) to provide professional training based on a foundation in the liberal arts; (3) to prepare the student for graduate work in the field; (4) to prepare him to teach in the public schools. To this end, two degrees are offered: the Bachelor of Music, with a major in theory-composition, history-literature, or applied music; and the Bachelor of Arts, with a major in music. The Bachelor of Science degree, with a major in music education, is offered in the College of Education.

Courses in music theory, literature, and applied music are open to all students who have completed the specified prerequisites or their equivalents. The University Orchestra, Band, Chapel Choir, Madrigal Singers, Women's Chorus, Chamber Chorus, and Men's Glee Club are likewise open to qualified students.

**THE BACHELOR OF MUSIC DEGREE:** The curriculum leading to the degree of Bachelor of Music is designed for students who wish to prepare for music teaching on the college level. The course requirements in the three major areas may be summarized as follows. A list of specific courses is available in the departmental office.



## THE HUMANITIES CURRICULUMS

### Major in      *Theory-Composition History-Literature Applied Music*

#### Academic courses

specified <sup>1</sup>	42 sem. hrs.	42 sem. hrs.	42 sem. hrs.
unspecified	9	9	10
Theory and Literature			
lower division	27	23	23
upper division	16	22	13
Applied Music	26	24	32

In addition, eight semester hours in ensemble courses; Air Science (men), health (women)\*, and physical activities\*.

**THE BACHELOR OF ARTS DEGREE:** The curriculum leading to the Bachelor of Arts degree with a major in music is designed for students whose interests are cultural rather than professional. The departmental requirements include sixteen semester hours in music theory, eighteen semester hours in music history and literature, eight semester hours in applied music, in addition to not more than six semester hours in the larger ensembles. A list of specific courses is available in the departmental office.

### *Philosophy*

The undergraduate course offerings of the Department of Philosophy are, as a group, intended both to satisfy the needs of persons wishing to make philosophy their major field and to provide ample opportunity for other students to explore the subject. In general, the study of philosophy can contribute to the education of the university student by giving him experience in critical and imaginative reflection on fundamental concepts and principles, by acquainting him with some of the philosophical beliefs which have influenced and are influencing his own culture, and by familiarizing him with some classic philosophical writings through careful reading and discussion of them. Courses designed with these objectives primarily in mind are Philosophy 1 (Introduction to Philosophy), Philosophy 41 (Elementary Logic and Semantics), Philosophy 45 (Ethics), Philosophy 53 (Philosophy of Religion), and the historical courses 101 through 105.

For students interested particularly in philosophical problems arising within their own special disciplines, a number of appropriate courses are available: Philosophy 52 (Philosophy in Literature), Philosophy 130 (The Conflict of Ideals in Western Civilization), Philosophy 141 (Philosophy of Language), Philosophy 147 (Philosophy of Art), Philosophy 152 (Philosophy of Social and Historical Change), Philosophy 154

<sup>1</sup> University requirement: American Civilization Program, 24 semester hours; College of Arts and Sciences requirements: 12 semester hours in foreign languages, and 6 semester hours in mathematics or science.

\*As required in the general A.B. curriculum.



(Political and Social Philosophy), Philosophy 156 (Philosophy of Science), and Philosophy 176 (Induction and Probability).

The departmental requirements for a major in philosophy are as follows:

- (1) a total of at least 27 hours in philosophy, not including Philosophy 1;
- (2) Philosophy 45, 101, 102, and 104, and either 41 or 155;
- (3) a grade of C or better in each course counted toward the fulfillment of the major.

Students who plan to undertake graduate studies in philosophy are urged to include Philosophy 155, 169, and 171 in their programs.

For students of exceptional ability and interest in philosophy the Department offers an Honors Program. Information regarding this special curriculum may be obtained from the departmental advisers.

### *Speech and Dramatic Art*

The courses in this Department have two main functions: (1) to provide training in basic oral communication skills to meet the general needs of undergraduates of the University; (2) to provide integrated specialized training for students who wish to major or minor in speech.

A major may be taken in the Speech Department in one of two general areas, the speech arts or the speech sciences. The speech arts include theater, radio and television, public speaking, and oral interpretation; the speech sciences include phonetics, semantics, speech pathology and audiology. The undergraduate program provides a level of training that will prepare students to enter several professional fields. Specifically, these fields are: (1) teaching speech and dramatic art or directing these activities; (2) radio and television; (3) speech and hearing therapy. In addition, adequate preparation and training for graduate work is provided.

Minors in speech are adapted to meet the needs of students majoring in English, the social sciences, journalism and public relations, elementary education, nursery school—kindergarten education, pre-law and pre-ministry fields.

Prerequisites for all majors in speech are Speech 1, 2, 3, or 4, and Zool. 1. Major requirements: 30 hours of courses in speech with 15 hours of courses numbered 100 and above, in either the speech arts or speech sciences. No grades of "D" in the major field will be counted toward completing the major requirements for graduation.

Specific requirements for professional training in speech and hearing therapy include completion of the general requirements for speech majors with the following additions: Zool. 14, 15; Psych. 1, 5, 131; a minimum of 21 hours of speech sciences at the 100 level.

## THE SOCIAL SCIENCES CURRICULUMS

Qualified students, depending upon specialized interests, are invited to participate in the activities of the University Theater, Radio-Television Guild, and the Calvert Debate Club.

### III. THE SOCIAL SCIENCES

#### *Economics*

Students registered in the College of Arts and Sciences may major in economics. During the freshman and sophomore years prospective economics majors should consult with their Lower Division adviser in Arts and Sciences concerning preparation for the major. Normally Economic Developments (2, 2) is taken during the freshman year and Principles of Economics (3, 3) during the sophomore year.

Juniors and seniors are advised by the faculty of the Department of Economics, which is administered in the College of Business and Public Administration. In addition to the ten lower division credits listed above, economics majors must complete a minimum of 26 credits with an average grade of not less than "C." National Income Analysis (3), Advanced Economic Principles (3) and Elements of Statistics (3) are required. Other courses to meet the requirements of the major are to be selected with the aid of a faculty adviser. Descriptions of courses in economics will be found in the catalog of the College of Business and Public Administration. Additional information about the curriculum in economics may be obtained at the departmental office.

#### *Geography*

Geography is a recognized major field in Arts and Sciences leading to the A.B. degree. Arts and Sciences students may register for its courses and major in geography from a liberal arts point of view although the Department is administered by the College of Business and Public Administration. Freshmen and sophomores wishing to major in geography should consult their Lower Division advisers and the Department of Geography. The following courses are required: Geog. 10 and 11 (3, 3); Geog. 30 (3); Geog. 35 (3); Geog. 40 and 41 (3, 3); Geog. 170 (3); Geog. 199 (3); and 15 hours in other geography courses numbered 100 to 198.

The following science courses are required: Bot. 1 (4); Chem. 1 (4); Agron. 114 (4). The following supporting courses are also required: Bot. 113 (2); Econ. 31 and 32 (3, 3); Soc. 105 (3). Certain of these courses are applicable to the minor. Please consult Senior Adviser, Department of Geography.

## *Government and Politics*

Although this Department is administered by the College of Business and Public Administration, government and politics is a recognized major field for students in the College of Arts and Sciences, leading to the A.B. degree. Freshmen wishing to major in government and politics should consult their Lower Division advisers about preparation for the major; additional information about the government and politics program may be obtained at the departmental office.

Arts and Sciences students may pursue the general G & P curriculum or the more specialized International Affairs curriculum. (Only BPA students may pursue a specialized curriculum in Public Administration).

Government and Politics majors must take a minimum of 36 semester hours in Government and Politics and may not count more than 42 hours in G & P toward graduation. No course in which the grade is less than "C" may be counted as part of the major work.

The Government and Politics fields are as follows: (1) American Government and Politics; (2) Comparative Government; (3) International Affairs; (4) Political Theory; (5) Public Administration; (6) Public Law; and (7) Public Policy and Political Behavior.

All G & P majors are required to take G & P 1, 3, 20, and 141 or 142 (Political Theory). They must also take one G & P course from three separate fields exclusive of Political Theory; and

In addition: (a) G & P majors (general) must take at least 15 G & P semester hours at the 100 level; (b) G & P majors taking the International Affairs curriculum must complete at least 15 semester hours at the 100 level in international affairs and comparative government courses, including G & P 101.

All students majoring in G & P (general) must take a minimum of 12 semester hours in one foreign language. Students majoring in G & P with specialization in International Affairs must take a minimum of 12 semester hours in one foreign language *above the first year elementary course*. (The first year elementary requirement may be waived by high school credit of placement tests.)

All students majoring in G & P must fulfill the requirements of a minor. The general requirement is the completion of 18 semester hours from approved Arts and Sciences departments other than G & P. At least six of the 18 hours must be taken at the 100 level from a single Department. Students majoring in G & P with specialization in International Affairs may choose to take all minor courses either in geographical area studies or may take them all on a Departmental basis.



## THE SOCIAL SCIENCES CURRICULUMS

### *History*

The Department of History recognizes that the study of history supplies the general student with the cultural background for the several fields of knowledge. At the same time the curriculum provides preparation for those entering specific fields of professional activity: (1) the teaching of history and the social sciences at the secondary level, (2) journalism, (3) research and archival work, (4) the diplomatic service. In addition, the curriculum offers adequate preparation and training for those who intend to pursue graduate study.

The program of the undergraduate student majoring in history is planned to insure a diversification of courses with the aim of familiarizing the student with the subject matter and disciplines of the broad fields of history. A faculty adviser, designated by the Department, will assist each undergraduate major in planning his program and in selecting courses to meet both major and minor requirements. The student will be expected to confer at regular intervals with his faculty adviser regarding the progress of his studies.

Undergraduate history majors must meet the following departmental requirements:

1. Prerequisites for majors are H. 5, 6 (unless exempted by examination) and H. 41, 42.
2. Every major is required to complete a minimum of 27 additional semester hours in the series, H. 31, to H. 199.
3. Every history major is required to complete the proseminar course, H. 199, three semester hours.
4. The remaining 24 hours of major work in advanced courses must show the following minimum distribution: (a) 9 hours in American history (including Latin American and Canadian) and (b) 9 hours in European and Asian history.
5. No grades of "D" will be counted in computing the hours to satisfy the major requirement.
6. Completion of the minor.

The undergraduate major will, during his junior year, file with his faculty adviser a minor sequence. The minor requirement may be satisfied by (1) a single sequence of 18 semester hours in any one of several related departments such as government and politics, economics, sociology, philosophy, literature, and geography; or (2) a split minor sequence to include two departments, provided a minimum of 9 hours is offered in each department, a total of 18 hours. In certain cases, and only on the basis of an approved written application, the student may offer a combination social science minor sequence of at least 18 hours or a combina-



## THE SOCIAL SCIENCES CURRICULUMS

tion humanities minor sequence of at least 18 hours. In all cases the minor sequence must include at least 6 semester hours of 100-level work in a single department. The average grade in the minor must be "C" or better.

### *Psychology*

The Department of Psychology is classed in both the Division of Social Sciences (for the B.A. degree) and the Division of Biological Sciences (for the B.S. degree) and offers educational programs related to both of these fields. The functions of the undergraduate curriculum in psychology are to provide an organized study of the behavior of man in terms of the biological conditions and social factors which influence such behavior. In addition, the undergraduate program in psychology is arranged to provide a level of training that will equip the students to enter certain professional pursuits which require a background in this field. It is important to note, however, that the undergraduate degree in psychology is not in itself recognized as carrying any professional status.

Departmental requirements toward the B.A. degree with a major in psychology are: Psych. 1, 90, and 150, and two from the following three: Psych. 154, 146, 147. The additional courses will be chosen by the student in discussion with his adviser, and these courses will total to a minimum of 28 hours. A minor program of 18 hours is organized to supplement the work in the major, and for the B.A. degree this minor program will ordinarily consist of courses in the social sciences, although mathematics and other sciences may be included. Students who are interested in the biological aspects of behavior tend to choose a program in psychology leading to the B.S., while those interested primarily in the social factors of behavior tend to choose a program leading to the B.A. The choice of the program is made in consultation with and requires the approval of the academic adviser. The departmental requirements for the Bachelor of Science degree are given elsewhere on these pages. No student who has ever received a second grade lower than "C" in the 28 hours of his major requirements will be certified for graduation with a major in psychology.

### *Sociology*

The major in sociology offers a liberal education and at the same time provides a background for those professional fields which focus on an understanding of human relationships.

Departmental requirements consist of a minimum of 30 semester hours in sociology and for the minor, a coherent group of courses totaling 18 hours. Of the latter at least 6 hours must be 100-level courses in a single

## BIOLOGICAL SCIENCES CURRICULUMS

department. Sociology credit with a grade of less than "C" may not be counted toward the major requirement.

Courses required of all sociology majors:—Soc. 1, 2, 183, 186, and 196. There are several suggested areas of emphasis within the sociology major, some with additional requirements:—(1) General Sociology; (2) Anthropology, (3) Community Studies (rural, urban, and suburban groups and their populations); (4) Crime Control Curriculum (a four year preprofessional program in the field of crime and delinquency and their prevention and control); (5) Sociology-Education (fulfills requirements for secondary teaching certification); (6) Social Institutions (the structure and functioning of social institutions including the family, religion, economic, governmental, and educational); (7) Pre-professional Social Work Curriculum (provides preprofessional social work school, and qualifications for certain social work positions for which post-graduate professional education is not required); (8) Social Psychology; (9) Intercultural Sociology; (10) Industrial and Occupational Sociology. A statement of the course requirements and other recommended courses is available in the departmental office.

## The General B.S. Curriculum

The curricula required of students majoring in departments of the Divisions of Biological Sciences and Physical Sciences vary much in regard to the year in which University and College required courses are scheduled in order to assure the proper sequential and prerequisite arrangement of major courses. In general, the freshman should take English 1, 2; 5-8 hours of non-science general requirements (e.g., G & P 1, a Group I elective, and Speech 7); required Air Science, Health, and P.E.; and science courses as indicated by his adviser. A full program for a freshman would be 16-18 hours each semester. Individual programs must be prepared in consultation with the assigned adviser. Lower division advisers and department heads have available copies of normal curricula for distribution to students who wish additional information about majors in departments of these divisions.

## IV. THE BIOLOGICAL SCIENCES

### *General Biological Sciences*

The program has been prepared for the student who is interested in biology but whose interest has not yet centered in any one of the biological sciences. This program is also a suitable one for the pre-dental student

who plans to earn the B.S. degree before entering dental school. This program, however, is not recommended for the pre-dental student. The program includes work in botany, entomology, microbiology, and zoology, and introduces the student to the general principles and methods of each of these biological sciences. The student may then emphasize any one of these areas in completing his program.

By proper selection of courses during the junior and senior years, a student may concentrate his work sufficiently in one area of biology to be able to continue graduate work in that field. However, a student who is definitely planning to do graduate work would be well-advised to major in one specific field of biology as soon as his interest becomes definite.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French or German to meet the foreign language requirements and Speech 7 (or Speech 1, 2) to fulfill the requirement in speech.

Required introductory courses in the biological sciences; Microb. 1; Bot. 1; Ent. 1; Zool. 1. These courses must be passed with an average grade of at least "C". The pre-dental student must take Zool. 2. as well.

Required supporting courses in mathematics and the physical sciences: Math 10, 11; Chem. 1, 3; Phys. 10, 11. The student working in most areas of biology will also need a year of organic chemistry (Chem. 31, 32, 33, 34 or Chem. 35, 36, 37, 38). Additional work in chemistry may also be required by the student's adviser, in accordance with the needs of the student's field of emphasis. The pre-dental student must include Chem. 35, 36, 37, 38 in his program.

Advanced courses in the biological sciences: The student must complete at least 30 semester hours of advanced work selected from the fields of botany, microbiology, entomology, and zoology. Of these credits at least 18 must be at the 100 level and taken in at least two of the four departments. The following courses in psychology may be counted as part of the required 30 semester hours but may not be used to satisfy the requirement of 18 semester hours at the 100 level: Psych. 106, 136, 145, 180, 181, 195.

A junior or senior following this curriculum will be advised by the department in which he plans to do the most work.

### *Botany*

Botany is recognized as either a major or minor field in Arts and Sciences, leading to the B.S. degree. The Botany Department is administered by the College of Agriculture, but students register for botany courses and major or minor in this subject just as if the Department were in the College of Arts and Sciences. Course descriptions and further informa-



## BIOLOGICAL SCIENCES CURRICULUMS

tion about the Botany Department are given in the catalog for the College of Agriculture.

Freshmen should consult their lower division adviser and also the Botany Department adviser, in planning the major program. The four lower division courses, General Botany—Bot. 1 and 2; Diseases of Plants—Bot. 20; and Plant Taxonomy—Bot. 11, total 14 credit hours and should be taken during the first two years. Sufficient upper division courses to give a total of 40 credit hours in botany must be taken. Included in these will be Plant Physiology—Bot. 101; Plant Microtechnique—Bot. 110; Plant Anatomy—Bot. 111; Plant Ecology—Bot. 102; and electives.

The botany electives chosen depend in part, on the student's chief interest. To support the courses in botany, major students are required to take General Chemistry—Chem. 1 and 3; Mathematics—Math. 10 and 11 as a minimum; Physics—Phys. 10 and 11; General Zoology—Zool. 1; General Microbiology—Microb. 1; Genetics; and 12 hours of a modern language, preferably German.

### *Microbiology*

The Department of Microbiology has as its primary aim providing the student with thorough and rigorous training in microbiology. This entails knowledge of the basic concepts of bacterial cytology, physiology, taxonomy, and genetics, as well as an understanding of the biology of infectious disease, immunology, general virology, and various applications of microbiological principles to public health and industrial arts. In addition, the Department pursues a broad and vigorous program of basic research, and encourages original thought and investigation in the above mentioned areas.

The Department also provides desirable courses for students majoring in allied departments who wish to obtain vital, supplementary information. Every effort has been made to present the subject matter of Microbiology as a basic core of material that is pertinent to all biological sciences.

**MICROBIOLOGY CURRICULUM:** The field of microbiology is too vast in scope to permit specialization during undergraduate study. Accordingly, the curriculum outlined below includes the basic courses in microbiology and allied fields.

A student planning a major in microbiology should consult his adviser during the first year. The supporting courses should be chosen only from the biological or physical sciences.

A grade of "D" in a course in microbiology will not be counted toward completing the major requirements for graduation.

Courses required in major and supporting courses: Microb. 1—General Microbiology (4); Microb. 51—Cytology of Bacteria (4); Microb.



## BIOLOGICAL SCIENCES CURRICULUMS

101—Pathogenic Microbiology (4); Microb. 131, 133—Applied Microbiology (4, 4); Microb. 60—Microbiological Literature (1); Microb. 103—Serology (4); Microb. 111—General Virology (3); Microb. 160—Systematic Bacteriology (2); Microb. 150—Microbial Physiology (2); Chem. 1, 3—General Chemistry (4, 4); Chem. 31, 33—Elements of Organic Chemistry (3, 3); Chem. 19—Elements of Quantitative Analysis (4) or Math. 14, 15—Elementary Calculus (3, 3); Chem. 161, 163—Biochemistry (2, 2); Math. 10, 11—Introduction to Mathematics (3, 3); Phys. 10, 11—Fundamentals of Physics (4, 4).

**MEDICAL TECHNOLOGY PROGRAM:** This is a professional program intended for those students who wish to prepare for technical work in any type of a medical laboratory. Because of its technical nature, it is broader in requirements and allows fewer electives. By proper planning of one's schedule beginning in the sophomore year, required courses may be taken in place of electives or certain courses in microbiology.

The student who elects this program should try to obtain summer employment in a medical laboratory. This program is so designed that a student, with proper planning, can prepare himself for admission to any of the training schools for medical technology located in various hospitals. These training schools require two, three, or four years of collegiate work, and after one year of hospital apprenticeship, the student is eligible to take examinations for the Registry of Medical Technologists of the American Society of Clinical Pathologists (M.T.) if he so desires.

### *Psychology*

The Department of Psychology is classed in both the Division of Biological Sciences and the Division of Social Sciences, and offers educational programs in both these fields. Further details on the undergraduate program in psychology are given elsewhere in these pages.

Departmental requirements toward the B.S. degree with a major in psychology are the same as for the B.A. degree, described on page 21. Students who are interested in the biological aspects of behavior tend to choose a program in psychology leading to the B.S. degree, while those interested primarily in the social factors of behavior tend to choose a program leading to the B.A. The choice of the program is made in consultation with and requires the approval of the academic adviser.

A candidate for the B.S. degree with a major in psychology will offer as supporting courses at least 18 hours of Science and Mathematics courses, chosen to supplement his work in the major. These courses are to be approved by the academic adviser and will consist of certain courses in Mathematics, the Physical and Biological Sciences. The student should plan in consultation with his adviser a coherent set of courses in the sciences. Ordinarily these courses will include at least three (3) semester

## BIOLOGICAL SCIENCES CURRICULUMS

courses of science and mathematics at the advanced level. A minimum of two (2) semester courses must be laboratory courses. In addition to these 18 hours of courses to support the major in psychology, the College of Arts and Sciences requires 12 hours of Science and Mathematics, and these latter requirements are to be chosen in accordance with the rules established by the College.

No student who has ever received a second grade lower than a "C" in the 28 hours of his major requirements will be certified for graduation with a major in psychology. In addition, a student must attain at least a 2.0 minimum grade average in the 18 hours of his supporting courses in Science and Mathematics in order to be certified for graduation with a major in psychology.

### *Zoology*

Two courses of study have been established as described below. At least 34 hours of Zoology, with an average grade of "C" are required for a major in the department. Zool. 14, 15, 55S and 181 will not be counted as part of the 34 hour major requirement.

ZOOLOGY MAJOR: Copies of the suggested curricula for majors in Zoology who are interested in any phase of animal study, pre-Medical training and pre-Dental training are available from advisers and from the Zoology office.

All majors are required to complete the following courses: Zool. 1, General Zoology; Zool. 2, The Animal Phyla; Zool. 5, Comparative Vertebrate Morphology and Zool. 6, Genetics. In addition students must include at least one course from each of the following groups as part of the required hours, (Group I: Zool. 101, 102, 103, 108, 109; Group II: Zool. 110, 118, 120, 127, 129; Group III: Zool. 121, 128, 130, 182, 190).

Supporting courses must include the following: Math. 10, 11 (3, 3) Introduction to Mathematics or Math. 19 (4)—Elementary Analysis; Physics 10, 11 (4, 4)—Fundamental Physics; Chem. 1, 3 (4, 4)—General Chemistry; Chem. 31, 33 (6) or Chem. 35, 36, 37, 38 (8)—Organic Chemistry and one of the following courses: Math. 14, 15 (6) or 20, 21 (8), Chem. 19 (4), Bot. 2 (4), Microb. 1 (4).

FISHERIES MAJOR: The aquatic resources of Maryland offer an excellent opportunity for the study of fisheries and marine Zoology. The fisheries major is essentially the same as the Zoology major except that the following courses must be included among the upper level courses: Zool. 118 (4)—Invertebrate Zoology; Zool. 121 (3)—Principles of Animal Ecology; Zool. 127 (4)—Ichthyology and Zool. 130 (4)—Hydrobiology.

Supporting courses are the same as those required of Zoology majors. Each student is also required to spend part of his summers in practical work in fisheries.

The department of Zoology also offers a special program for the exceptionally talented and promising student. The Honors Program will emphasize the scholarly approach to independent study rather than adherence to a rigid prescribed curriculum. Information regarding this program may be obtained from the departmental office or honors advisers.

## V. THE PHYSICAL SCIENCES

### *General Physical Sciences*

This program has been prepared for the student who desires an introduction to the physical sciences but whose interest has not yet centered in any one field of the physical sciences. The program includes some advanced work in chemistry, mathematics, and physics, and permits the student to emphasize one of these fields without having to meet the full requirements for a major in one specific field. The program is not recommended for students who may later do graduate work in mathematics or in one of the physical sciences.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French or German to meet the foreign language requirement and Speech 7 (or Speech 1, 2) to fulfill the requirement in speech.

Required introductory courses in mathematics and the physical sciences: Math. 19; Chem. 1, 3; Phys. 10, 11 (or 20, 21 or 15, 16). These courses must be passed with an average grade of at least "C" for the student to be eligible to continue with this program.

Advanced courses in mathematics and the physical sciences: The student must complete at least 36 semester hours of advanced work selected from the Departments of Chemistry, Mathematics, and Physics. Of these credits at least 18 must be at the 100 level and taken in at least two of the three departments with no less than 3 in the second department. The student should normally take calculus (Math. 20, 21) inasmuch as practically all the advanced work in mathematics and physics requires calculus.

### *Chemistry*

The science of chemistry is so broad that completion of a well-planned course of undergraduate study is necessary before specialization. The curriculum outlined below describes such a course of study. The se-



## PHYSICAL SCIENCES CURRICULUMS

quence of courses given should be followed as closely as possible; it is realized, however, that some deviation from the sequence may be necessary toward the end of the program. All of the courses in chemistry listed, unless otherwise designated, are required of students majoring in chemistry.

FIRST YEAR: Chem. 1, 3—General Chemistry (4, 4); Math. 19—Elementary Analysis (4); Speech 7—Public Speaking (2). SECOND YEAR: Chem. 15—Qualitative Analysis (4); Chem. 21—Quantitative Analysis (4); Chem. 35, 37—Elementary Organic Chemistry (2, 2); Chem. 36, 38—Elementary Organic Laboratory (2, 2); Math. 20, 21, 22—Calculus (4, 4, 4); German 1, 2—Elementary German (3, 3). THIRD YEAR: Chem. 123—Quantitative Analysis (4); Chem. 141, 143—Advanced Organic Chemistry (2, 2); Chem. 144—Advanced Organic Laboratory (2); Phys. 20, 21—General Physics (5, 5) German 6, 7—Intermediate Scientific German (3, 3); Electives (1-2, 2-3). FOURTH YEAR: Chem. 101—Advanced Inorganic Chemistry (2); Chem. 187, 189—Physical Chemistry (3,3); Chem. 188, 190—Physical Chemistry Laboratory (2, 2); Chem. 146—The Identification of Organic Compounds (2); Electives (5-8, 5-8); (Eng. 7 is strongly recommended.)

### *Mathematics*

This curriculum offers training in the fundamentals of mathematics in preparation for graduate work or teaching, or for positions in governmental or industrial laboratories.

### COURSE REQUIREMENTS

A student intending to major in mathematics must complete the introductory sequence: Math. 19, 20, 21, 22, or the corresponding honors sequence: Math. 19H, 20H, 22H.

The normal requirements for a mathematics major include, in addition to the College requirements, 25 credit hours of upper division work in mathematics and at least 22 credit hours of supporting courses.

The upper division work in mathematics must normally include Math. 110—Advanced Calculus (4), six credit hours of algebra, three credit hours of geometry or topology, and at least one of the courses: Math. 111—Advanced Calculus (4), Math. 112—Infinite Processes (3), Math. 113—Complex Variables (4), Math. 114—Differential Equations (3), or Math. 146—Fundamental Concepts of Mathematics (3). Each student's program must be approved by his mathematics department adviser.

Supporting courses must include Physics 20, 21—General Physics (5, 5), or approved equivalents, and an approved program of at least 12 additional credit hours outside the department of Mathematics, of which at least



six hours must be in a single department and at least six hours must be at the 100 level. The foreign language requirement should be satisfied by either German, French, or Russian.

## GRADE REQUIREMENTS

To continue as a mathematics major, a student must maintain a "C" average in all mathematics courses. No grade below "C" can be counted toward a major.

## HONORS IN MATHEMATICS

The honors program is designed for students showing exceptional ability and interest in mathematics. Its aim is to give a student the best possible mathematical education. Participants are selected by the Honors Committee of the Department of Mathematics on the basis of recommendations from high school teachers and members of the faculty.

Wherever possible, honors students are placed in special mathematics courses, or in special sections of regular courses. Independent work is encouraged and can be done in place of formal course work. A final written and oral comprehensive examination in mathematics is given at the end of the program.

## *Physics*

The physics curriculum is designed for students who desire training in the fundamentals of physics in preparation for graduate work or teaching, or for positions in governmental and industrial laboratories. Students who enter the University intending to major in physics are urged to take during the first two years the introductory courses Phys. 15, 16, 17, 18, and two semesters of Phys. 60. However, students who enter physics after taking one of the other elementary physics courses (either Phys. 10, 11 or Phys. 20, 21) can reach approximately the same level by taking Phys. 50, 51, Phys. 104, and two semesters of Phys. 60. All students should accompany these basic courses with Math. 19, 20, 21, and 22 (4, 4, 4, 4). Physics majors are encouraged to try to enroll in the accelerated honors sections of these courses when they are qualified.

After completion of the courses mentioned above, the Physics majors will be required to take the following courses: Physics 127, 128—Elements of Mathematical Physics (4, 4); Physics 152—Introduction to Thermodynamics and Statistical Mechanics (3) or Physics 144, 145—Methods of Theoretical Physics (4, 4); and Physics 118—Introduction to Modern Physics (3); Physics 119—Modern Physics (3); and at least two semesters of advanced laboratory courses (e.g., Phys. 100, 109, 110, 140, 141, or 190). Supporting courses must include at least one additional mathematics course approved by the physics adviser (which is usually Mathematics 110 or Mathematics 162).

## PHYSICAL SCIENCES CURRICULUMS

Students who wish to be recommended for graduate work must maintain a "B" average and should also include as many as possible of the following courses: Physics 120—Nuclear Physics (4); Physics 122—Properties of Matter (4); Physics 140, 141—Atomic and Nuclear Physics Laboratory (3, 3); Physics 144, 145—Methods of Theoretical Physics (4, 4); and Mathematics 110, 111—Advanced Calculus (4, 4).

Recommended course programs are available from the Department. Students may major in physics only if a grade "C" is attained in each semester of the elementary physics courses and in each of the required mathematics courses.

## HONORS IN PHYSICS

Any students who complete Math. 22 and at least 12 credits in physics by the end of the sophomore year and who have maintained a 3.0 cumulative average in the total academic program and a very good average in physics and astronomy courses may apply for admission to the Honors Program in physics. This program involves some independent work in addition to the normal physics major program and also requires the completion of the comprehensive examination in physics during the second semester of the senior year. Candidates for departmental honors in physics are selected from participants in the Honors Program. For further details, interested physics majors should consult their advisers.

## *Astronomy*

The requirements for a major in Astronomy are designed to provide a solid background in related fields and a broad program of study in the fundamentals of Astronomy. The program is designed to prepare students for graduate work as well as for positions in governmental and industrial laboratories and observatories.

Students who enter the University intending to major in Astronomy are urged to take during the first two years the same introductory physics and mathematics courses recommended for physics majors (see requirements for physics majors). If their schedule permits they should also take the introductory astronomy course Ast. 1, 2—or Ast. 10—(3). Alternatively, Ast. 10 may also be taken during the fall term of the Junior year.

In addition to the courses mentioned above, astronomy majors are required to take the following courses: Phys. 127, 128—Elements of Mathematical Physics (4, 4); Ast. 100—Observational Astronomy (3) and one other astronomy course at the 100 level; and one 3-credit mathematics course approved by the department adviser (which is usually Math. 110—Advanced Calculus or Math. 162—Applied Mathematics I).

Recommended course programs are available from the Department of Physics and Astronomy. Students may major in Astronomy only if a

## PHYSICAL SCIENCES, PRE-PROFESSIONAL CURRICULUMS

grade of "C" is attained in each semester of the elementary physics and astronomy courses and in each of the required mathematics courses.

Students who wish to be recommended for graduate work must maintain a "B" average and should take as many as possible of the following courses: one additional astronomy course at the 100 level, Phys. 118, 119—Modern Physics (3, 3), and Physics 120—Nuclear Physics (4), or Physics 116—Fundamental Hydrodynamics (3), and at least two additional mathematics courses, usually Math. 114—Differential Equations (3), and Math. 111—Advanced Calculus (3), or Math. 116—Complex Variables, or Math. 130—Probability (3).

### HONORS IN ASTRONOMY

Any students who complete Math. 22 and at least 12 credits in physics and astronomy by the end of the sophomore year and who have maintained a 3.0 cumulative average in the total academic program and a very good average in physics and astronomy, may apply for admission to the Honors Program in astronomy. This program involves some independent work in addition to the normal astronomy major program and also requires the completion of the comprehensive examination in astronomy during the second semester of the senior year. Candidates for departmental honors in astronomy are selected from participants in the Honors Program in astronomy. For further details, interested astronomy majors should consult their advisers.

## VI. PRE-PROFESSIONAL CURRICULUMS

### COMBINED PROGRAM IN ARTS AND SCIENCES AND LAW

Some law schools will consider only those applicants who have completed a four-year college program leading to the A.B. or B.S. degree. Other law schools, including the School of Law of the University of Maryland, will accept applicants who have successfully completed a three-year program of academic work. Law schools do not prescribe the specific courses which the student should take in his pre-law work, but do not require that the student follow one of the standard programs offered by the undergraduate college.

**FOUR YEAR PROGRAM:** The student who plans to complete the requirements for the A.B. or B.S. degree before entering law school should select one of the major fields for concentration. Pre-law students most commonly select one of the following subjects as their major: American civilization, economics, English, government and politics, history, philosophy, psychology, sociology, speech. During his first two years, the pre-law student will normally follow the General A.B. Curriculum de-



## PRE-PROFESSIONAL CURRICULUMS

scribed earlier in these pages. During his junior and senior year, the pre-law student will complete the major and minor requirements for the A.B. degree. The requirements in the various major fields are described elsewhere in this catalog.

**THREE YEAR PROGRAM:** The student who plans to enter law school at the end of his third year should follow the General A.B. Curriculum during his first two years. During his junior year he will complete the requirements for a minor (18 semester hours) in one of the fields of concentration. He will also be able to take some additional courses as electives. His program for the first three years must include all of the basic courses required for a degree from the College of Arts and Sciences and a minor of 18 semester hours as approved by his pre-law adviser. He must earn a total of 90 academic semester hours, exclusive of the credits in air science (men), health (women), and physical education as required of all undergraduate students.

**COMBINED DEGREE IN ARTS AND SCIENCES AND LAW:** The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Law of the University of Maryland will be eligible for the Bachelor of Arts degree after the successful completion of one year of full-time courses in the School of Law in Baltimore (or the equivalent in semester hours of work in the Evening Division of the School of Law). The completion of a year's work in the Law School constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of required work in air science (men), health (women), and physical activities. The student must earn at least a "C" average in all of his work at College Park, and at least a "C" average in 30 semester hours of work in the School of Law. A student who enters the combined program with advanced standing must complete the final 30 academic semester hours of pre-law work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Arts by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Law.

The course of study at the School of Law requires three years of full-time work for completion. Students who successfully complete the program are awarded the degree of Bachelor of Laws.

## COMBINED PROGRAM IN ARTS AND SCIENCES AND DENTISTRY

Candidates for admission to dental schools should normally plan to take at least a three-year undergraduate program. Although the School of Dentistry of the University of Maryland considers some applications from students with only two years of undergraduate preparation, it requires three years of the great majority of its candidates and expects these candidates to meet the full requirements of the combined degree in Arts and Sciences and Dentistry as described below.



## PRE-PROFESSIONAL CURRICULUMS

Certain science courses are prescribed for all candidates for dental school: Zool. 1, 2; Chem. 1, 3, 35, 36, 37, 38; Math. 10, 11 (or 18, 19); Phys. 10, 11 (or 20, 21). These courses must be included in any pre-dental program. The student who wishes to be a candidate at the end of his second year must complete all of these courses during the first two years. All requirements must be completed by June of the year in which the student expects to enter dental school.

Neither successful completion of a pre-dental program nor of degree requirements guarantees admission to a dental school. All dental schools, including that of the University of Maryland, have their own admission requirements and procedures. Dental schools expect candidates to attain an academic average substantially higher than the minimum average required for graduation from college. Through its pre-dental advisers and its Committee on the Evaluation of Pre-Dental Students this College attempts to assist its applicants with their problems.

**FOUR-YEAR PROGRAM:** The student electing this program should select one of the major fields in which the A.B. or B.S. degree is offered. Pre-dental students following the four-year program most commonly select one of the following subjects as their major field: Microbiology, general biological sciences, general physical sciences, psychology, zoology. These programs are described elsewhere in this catalog. However, a student may meet dental school requirements in most of the majors offered in the College of Arts and Sciences, provided that he includes in his program the science courses specifically prescribed by dental schools. The student's pre-dental adviser will assist the student in planning a program which will meet both the dental school requirements and also the requirements for the A.B. or B.S. degree.

**THREE-YEAR PROGRAM:** The student electing to follow this program must complete all the courses specially required by the dental school. He must earn a total of 90 academic semester hours in addition to the credits in air science (men), health (women), and physical activities required of all undergraduate students. He must complete supporting courses as approved by his pre-dental adviser. He must follow very carefully the program as outlined below:

**Freshman Year:** Eng. 1, 2; Zool. 1, 2; Chem. 1, 3; Math. 10, 11; air science (men); Health 2, 4 (women); physical activities.

**Sophomore year:** Eng. 3, 4; Group I Electives; G. & P. 1; Chem. 35; 36, 37, 38, H. 5, 6; foreign language (French or German or Latin); air science (men); physical activities.

**Note:** Students planning to apply for admission to dental school at the end of the second year must take Phys. 10, 11, in place of H. 5, 6. The student who takes the two-year program will not be eligible for the Bachelor of Science degree.

## PRE-PROFESSIONAL CURRICULUMS

Junior year: Phys. 10, 11; foreign languages (continued); Speech 7; supporting courses as approved by a pre-dental adviser; electives.

Supporting courses for the Arts-Dentistry degree may be selected from the following combination: zoology, 6 hrs. above 100; microbiology, 8 hrs. above 100; Chem. 19 plus 3 hours above 100 in any science; Chem. 161, 162, 163, and 164; or 9 hours above 100 in any one department in the arts, humanities or social sciences.

Any student who begins the three-year program may change to a four-year program by making a choice of a major field and adjusting his program accordingly. However, the student is warned that some courses necessary in certain majors must be taken in the sophomore year in order for the student to be eligible for the more advanced courses in that field given in the junior and senior year.

**COMBINED DEGREE IN ARTS AND SCIENCES AND DENTISTRY:** The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Dentistry of the University of Maryland will be eligible for the Bachelor of Science degree after successful completion of the first year in the School of Dentistry. The completion of a year's work in the School of Dentistry constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of required work in air science (men), health (women), and physical activities. The qualitative grade requirements of the College of Arts and Sciences and of the University must be fulfilled. A student who enters the combined program with advanced standing must complete the final 30 semester hours of pre-dental work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Science by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Dentistry.

The course of study at the School of Dentistry requires four years for completion. Students who successfully complete the program are awarded the degree of Doctor of Dental Surgery.

## COMBINED PROGRAM IN ARTS AND SCIENCES AND MEDICINE

The student planning to request admission to a medical school must pursue a course of study which meets the requirements prescribed by the Council of Medical Education of the American Medical Association and those added or recommended by the particular medical school of his choice.

Some medical schools will consider only those applicants who will have completed a four-year college program and will have earned the A.B. or B.S. degree at the time of entrance into medical school. Other medical schools will consider applicants who will have completed three years of college work. The School of Medicine of the University of Maryland

## PRE-PROFESSIONAL CURRICULUMS

accepts some candidates who will have completed only three years of college work but looks with more favor upon the four-year program for most students. Both the four-year program and the three-year program are described below. In both programs all required science courses must be completed by June of the year in which the student expects to enter medical school.

Neither successful completion of a pre-medical program nor of degree requirements guarantees admission to any medical school. All medical schools, including that of the University of Maryland, have their own admission requirements and procedures. Medical schools expect candidates to have attained an academic average substantially higher than the minimum average required for graduation from college. Through its Committee on the Evaluation of Pre-Medical Students this College attempts to assist its applicants with their problems.

**FOUR YEAR PROGRAM:** The student electing this program should select one of the major fields in which the A.B. or B.S. degree is offered. In addition to meeting all general degree requirements and the specific requirements of the major selected, the pre-medical student must include in his program the following required pre-medical courses: Zool. 1, 2, 5, 20; Chem. 1, 3, 19, 35, 36, 37, 38; Math. 10, 11 (or 18, 19); (Phys. 10, 11 (or 20, 21).

Pre-medical students, following the four-year program, most commonly select one of the following subjects as their major field: microbiology, general physical sciences, psychology, zoology. These programs are described elsewhere in this catalog. However, a student may meet medical school requirements in most of the majors in the College of Arts and Sciences, provided that he includes in his program the individual courses specifically prescribed by medical schools. The student's premedical adviser will assist the student in planning a program which will meet both the medical school requirements and also the requirements for the A.B. or B.S. degree.

**THREE-YEAR PROGRAM:** The student electing to follow this program must complete all of the courses specifically required by the medical school. He must earn a total of 90 academic semester hours in addition to the credits in air science (men), health (women), and physical activities required of all undergraduate students. He must follow very carefully the program as outlined in the following paragraphs.

**Freshman year:** Eng. 1, 2; G. & P. 1; Group I Elective; Math. 10, 11; Chem. 1, 3; Zool. 1, 2; air science (men), health 2, 4 (women); physical activities.

**Sophomore year:** Eng. 3, 4; Chem. 35, 36, 37, 38; Zool. 5, 20; foreign language (French or German or Latin); air science (men); physical activities.



## PRE-PROFESSIONAL CURRICULUMS

Junior year: H. 5, 6; foreign language (continued); Chem. 19, Phys. 10, 11; Sp. 7; Psych. 1; minor courses as approved by the pre-medical adviser. Any student who begins the three-year program may change to the four-year program by making a choice of a major field and adjusting his program accordingly. However, the student is warned that some courses necessary in certain majors must be taken in the sophomore year in order for the student to be eligible for the more advanced courses in that field given in the junior and senior years. The majority of students would therefore be wise to plan a four-year program on entrance and not attempt the highly concentrated three-year program.

COMBINED DEGREE IN ARTS AND SCIENCES AND MEDICINE: The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Medicine of the University of Maryland will be eligible for the Bachelor of Science degree after successful completion of the first year in the School of Medicine. The completion of a year's work in the School of Medicine constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of the required work in air science (men), health (women), and physical activities. The qualitative grade requirements of the College of Arts and Sciences and of the University must also be fulfilled. A student who enters the combined program with advanced standing must complete the final 30 semester hours of pre-medical work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Science by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Medicine.

The course of study at the School of Medicine requires four years for completion. Students who successfully complete the program are awarded the degree of Doctor of Medicine.

MEDICAL TECHNOLOGY: Registry as a Medical Technician (MT) requires 90 hours of basic academic work; followed by a year of specialized training in a hospital laboratory school, and the passing of an examination given by the Registry of Medical Technicians. There are some hospital training schools already requiring four years of training prior to the specialized work.

The Department of Microbiology (page 24) offers a four-year program which adequately prepares a student for acceptance by a hospital training school or for positions in governmental, research or hospital laboratories, but it does NOT enable the student to take the "registry examination" without additional training.



# COURSE OFFERINGS

## AMERICAN STUDIES

*Committee on American Studies:* ASSOCIATE PROFESSOR BEALL, *Executive Secretary.*

*Professors:* LAND, HOFFSOMMER, MURPHY AND PLISCHKE.

### AMER. STUD. 127, 128. CULTURE AND THE ARTS IN AMERICA. (3)

Prerequisite, junior standing. A study of American institutions, the intellectual and aesthetic climate from the colonial period to the present.

### AMER. STUD. 137, 138. CONFERENCE COURSE IN AMERICAN STUDIES. (3, 3)

First and second semesters. Four American classics (drawn from fields of the Departments of English, Government and Politics, History, and Sociology, which cooperate in the program) are studied each semester. Specialists from the appropriate departments lecture on these books. For the first semester of this academic year the classics are: Franklin's *Autobiography*, *The Life and Writings of Thomas Jefferson*, De Tocqueville's *Democracy in America*, and Schlesinger's *The Age of Jackson*; for the second semester, Thoreau's *Walden*, Howell's *A Hazard of New Fortunes*, Veblen's *Theory of the Leisure Class*, and Riesman's *The Lonely Crowd*. Through these books and the lectures on them, the student's acquaintance with American culture is brought to a focus. This course is required for seniors majoring in the American Studies Program. The student majoring in American Studies can obtain his other courses principally from the offerings of the Departments of English, History, Government and Politics, and Sociology. (Beall and cooperating specialists.)

### *For Graduates*

### AMER. STUD. 201, 202. SEMINAR IN AMERICAN STUDIES. (3, 3)

First and second semesters.

(Bode.)

### AMER. STUD. 399. THESIS RESEARCH. (1-6)

## ART

*Professor and Acting Head:* LEMBACH.

*Associate Professor:* MARIL.

*Assistant Professors:* GRUBAR, STITES, O'CONNELL, JAMIESON, AND LONGLEY.

*Instructor:* FREENY.

### ART 1. BASIC DRAWING. (3)

Three two-hour laboratory periods per week. Drawing preparatory to life and portrait drawing and painting. Stress is placed on fundamental principles, such as the study of relative proportions, values, and modeling, etc. (O'Connell.)

## ART

### ART 2. BASIC DRAWING. (3)

Three two-hour laboratory periods per week. Drawing from model, (head and figure) with emphasis on structure and movement. (Jamieson.)

### ART 3. RENDERING. (2)

Two two-hour laboratory periods per week. Methods of rendering architectural, interior, and landscape architectural drawings. Included are: techniques of monotone wash and water color. (Stites.)

### ART. 5. BASIC DESIGN. (3)

One lecture hour and five laboratory hours per week. A basic course in design for beginners consisting of the theory and practice of design. Theory of design deals with design elements such as line, shape, form, etc., and design principles such as contrast, balance, rhythm, etc. Design practice consists of working with pencil, pen, water color, casein, and other painting media in terms of organization, representation and space. (Freeny.)

### ART 6. STILL LIFE. (3)

One lecture hour and five laboratory hours per week. Prerequisite, Art 5. A continuation of Art 5 with emphasis on more advanced still life painting problems with different media. (Jamieson.)

### ART 7, 8. BASIC PAINTING. (3, 3)

Three two-hour laboratory periods per week. Drawing and painting; organization of landscape material with emphasis on compositional structure. (Maril.)

### ART 9. HISTORY OF ART. (3)

A survey of the cultures from prehistoric times to the Renaissance, as expressed through painting, sculpture, and architecture. (Stites.)

### ART 11. HISTORY OF ART. (3)

Designed to continue the survey begun in Art 9. The course is concerned with the development of painting, sculpture, and architecture from the Renaissance to the present day. (Grubar, Stites.)

### ART 13, 14. ELEMENTARY SCULPTURE. (3, 3)

Two three-hour laboratory periods per week. Study of three-dimensional compositions in round and bas-relief. Mediums used: clay, plasteline, plastic, wood, stone. (Freeny.)

### ART 15. FUNDAMENTALS OF ART. (3)

Two three-hour laboratory periods per week. This course emphasizes the fundamental principles of the creative, visual arts for those wishing to teach. It includes elements and principles of design, perspective, and theory of color. Studio practice is given in the use and application of different media. (Lembach, Longley.)

### ART 20. ART APPRECIATION. (2)

An introduction to the technical and aesthetic problems of the artist. The student becomes acquainted with the elements that go into a work of the visual arts. He is made aware of the underlying structure that results in the "wholeness" of an art work. He will see examples (original and reproductions) of masterpieces of art. (Lembach.)

**ART 22. HISTORY OF AMERICAN ART. (3)**

This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. The development of painting, sculpture and architecture in America from the colonial period to the present. (Grubar, Stites.)

**ART 100. ART APPRECIATION. (2)**

This course enables students to develop a basis for understanding works of art. It investigates the forms and backgrounds of painting, sculpture and architecture. (Grubar.)

**ART 102, 103. CREATIVE PAINTING. (3, 3)**

Three two-hour laboratory periods per week. Prerequisites, Art 1, 5 and 7. Assignments of pictorial composition aimed at both mural decoration and easel picture problems. The formal values in painting are integrated with the student's own desire for personal expression. (Maril.)

**ART 104, 105. LIFE CLASS (DRAWING AND PAINTING, INTERMEDIATE). (3, 3)**

Three two-hour laboratory periods per week. Prerequisites, Art 1 and 5. Careful observation and study of the human figure for construction, action, form, line, and color. (Jamieson.)

**ART 106, 107. PORTRAIT CLASS (DRAWING AND PAINTING). (3, 3)**

One lecture hour and five laboratory hours per week. Prerequisites, Art 1 and 5. Thorough draftsmanship and study of characterization and design stressed. (Freeny.)

**ART 108, 109. MODERN ART. (3, 3)**

A survey of the developments in various schools of modern art. Works of art analyzed according to their intrinsic values and in their historical background. Collections of Washington and Baltimore are utilized. (Grubar, Stites.)

**ART 110. PRINT MAKING. (3)**

Basic experiences in the various print making media: woodcut, etching, and lithography. Emphasis on a demonstrated understanding of the means of making fine prints. (O'Connell.)

**ART 111. PRINT MAKING. (3)**

Development in depth of not more than two print making media leading to a demonstrated capability with the techniques as means to artistic ends. (O'Connell.)

**ART 113, 114. ILLUSTRATION. (3, 3)**

Two three-hour laboratory periods per week. Prerequisites, Art 1, 5, 104. This course is designed for the purpose of channeling fine art training into practical fields, thereby preparing the student to meet the modern commercial advertising problems. Special emphasis will be placed upon magazine and book illustrating. (Jamieson.)

## ART

### ART 115, 116. STILL LIFE PAINTING (ADVANCED). (3, 3)

Two three-hour laboratory periods per week. Prerequisite, Art 6. This course is for those who have completed Art 6 and wish to specialize in Still Life Painting, and more creative work. (Jamieson.)

### ART 154, 155. LIFE DRAWING AND PAINTING (ADVANCED). (3, 3)

Three two-hour laboratory periods per week. Prerequisite, Art 105. This course is for those who have completed Art 105 and wish to develop greater proficiency in the use of the figure in creative work. (Jamieson.)

### ART 156, 157. PORTRAIT PAINTING (ADVANCED). (3, 3)

Two three-hour laboratory periods per week. Prerequisite, Art 106, 107. This course is for those who have completed Art 107 and wish to specialize in portraiture. (Freeny.)

### ART 158, MURAL PAINTING (3)

A course designed for those students interested in actual experience of carrying out paintings in architectural settings. Draftsmanship is stressed. (Jamieson.)

### ART 185, 186. RENAISSANCE AND BAROQUE ART IN ITALY. (2, 2)

Prerequisite, Art 11. The first term is concerned with the emergence and development of Renaissance painting, sculpture, and architecture through the first quarter of the 16th century. In the second term Mannerism and the Baroque phases are studied. (Grubar, Stites.)

### ART 188, 189. HISTORY OF 16TH AND 17TH CENTURY PAINTING. (2, 2)

Prerequisite, Art 11. A study of the development of painting and related arts. The first semester study will center on Italian painting in the 16th and 17th century and the emergence of the Baroque style. During the second semester, the paintings of France, Spain, England, and the Low Countries will be considered. (Grubar.)

### ART 190, 191. SPECIAL PROBLEMS IN ART. (2 OR 3, 2 OR 3)

Two three-hour laboratory periods per week or its equivalent in art history and appreciation. Permission of Department Head. Designed to offer the advanced art student special instruction in areas not offered regularly by the Department. (Staff.)

### *For Graduates*

The requirements of students will determine which courses will be offered.

### ART 205, 206. ADVANCED PROBLEMS IN DRAWING. (3, 3)

Prerequisite, at least one year of traditional methods in drawing from life models. An investigation of the many media of drawing and the potentials existing therein. (Staff.)

### ART 210. MATERIALS AND TECHNIQUES OF PAINTING. (3)

A technical investigation of painting methods from the Renaissance to the present. Preparation of grounds, media, underpainting, glazes, and emulsions for tempera. (Jamieson.)



**ART 215, 216. ADVANCED PROBLEMS IN PAINTING. (3, 3)**

An understanding of the formal structures of traditional painting is expected. Problems will be developed by the individual students that will express their creative potentials. An experimental attitude will be encouraged. Investigation will be made of new painting media. (Staff.)

**ART 220. CREATIVE TESTS IN PLASTICS MEDIA. (3)**

Technical and creative tests employing the latest plastics media used by contemporary artists. Special emphasis is placed on Polymer Tempera. (Jamieson.)

**ART 276, 277. ADVANCED PROBLEMS IN ART EDUCATION. (3, 3)**

A closely integrated series of definite problems pursued in an exploratory, individual manner, determined by the student's professional needs. (Lembach.)

**ART 230, 231. EXPERIMENTATION IN SCULPTURE. (3, 3)**

Professional aspects of sculpture, independent research and experimentation are stressed. (Freeny.)

**ART 235. MATERIALS AND TECHNIQUES IN SCULPTURE. (3)**

For the advanced student interested in a better understanding of his materials. Methods of armature building, casting, and the varieties of stone, wood, metal and plastic materials will be experimented with and discussed. (Freeny.)

**ART 245. MATERIALS MEDIA AND TECHNIQUES IN ART. (3)**

A laboratory-lecture course required of all majors in the history and criticism of art. An intensive study and practical application of materials, media and techniques employed during the various historic periods. (Staff.)

**ART 250. AMERICAN PRE-COLUMBIAN AND COLONIAL ART. (3)**

An investigation of the arts of the various Indian cultures, the period of exploration, and the early and later phases of Colonial development. (Grubar, Stites.)

**ART. 255. SEMINAR IN NINETEENTH CENTURY AMERICAN ART. (3)**

A critical examination of painting, sculpture and architecture from the end of the Colonial period until 1860. (Grubar.)

**ART 260. SEMINAR IN CONTEMPORARY ART. (3)**

Prerequisites, Art 108, 109 and the consent of the instructor. An intensive study of the major developments in Western European and American art from 1900 until the present day. (Grubar.)

**ART. 265. BAROQUE ART. (3)**

Advanced problems in Italian and Northern European art of the Baroque period. (Grubar, Stites.)

**ART 270. ROMANESQUE AND GOTHIC ART. (3)**

Architectural, sculptural and painting problems in Western Europe. (Grubar, Stites.)

**ART 271. EARLY CHRISTIAN AND BYZANTINE ART. (3)**

A study of church architecture, sculpture, painting, mosaic, and the minor arts, with particular emphasis on iconography. (Grubar, Stites.)

## ASTRONOMY

### ART 275. CLASSICAL ART. (3)

Problems in pre-Greek, Greek, Etruscan and Roman art. (Grubar, Stites.)

### ART 280. FAR EASTERN ART. (3)

Painting, sculpture, architecture and the minor arts of China, Japan and related countries from the earliest times to the end of the nineteenth century.

(Staff.)

### ART 285. MIDDLE AND NEAR EASTERN ART. (3)

The art and architecture of India, Iran, Mesopotamia and Egypt. (Staff.)

### ART 399. RESEARCH-THESIS. (1-6)

(Staff.)

## ASTRONOMY

*Professor and Head:* TOLL.

*Professor and Director of Astronomy:* WESTERHOUT.

*Visiting Professor:* SHAKESHAFT.

*Visiting Professor (Part-time):* MUSEN.

*Associate Professor:* ERICKSON.

*Associate Professor (Part-time):* SMITH.

*Assistant Professors:* BELL, VAN WIJK.

### ASTRONOMY 1, 2. ASTRONOMY. (3, 3)

Three lectures per week. An elementary course in descriptive astronomy, also appropriate for non-science students. Lecture demonstration fee, \$3 per semester. (Smith.)

### ASTR. 10. DESCRIPTIVE AND ANALYTICAL ASTRONOMY. (3)

First semester. Three lectures a week. A general survey course intended for science majors. Prerequisite, concurrent or previous enrollment in Math 20. Lecture demonstration fee, \$3.00. (Van Wijk.)

### ASTR. 100. OBSERVATIONAL ASTRONOMY. (3)

Second semester. Two lectures and two hours of laboratory work per week. Prerequisite, Math 21 and at least 12 credits of introductory physics and astronomy courses. Laboratory fee, \$10. Introduction to the methods of astronomical photometry and spectroscopy. (Van Wijk.)

### ASTR. 101. INTRODUCTION TO GALACTIC RESEARCH. (3)

First semester. Three lectures per week. Prerequisite, Math 21 and at least 12 credits of introductory physics and astronomy courses. Stellar motions, methods of galactic research, study of our own and nearby galaxies, clusters of stars. (Van Wijk.)

**ASTR. 102. INTRODUCTION TO ASTROPHYSICS. (3)**

Second semester. Three lectures per week. Prerequisite, previous or concurrent enrollment in Physics 119 or consent of the instructor. Spectroscopy, structure of the atmospheres of the sun and other stars. Observational data and curves of growth. Chemical composition. (Bell.)

**ASTR. 110. INTRODUCTION TO RADIO ASTRONOMY. (3)**

Three lectures per week. Prerequisite, Math 21 and at least 12 credits of introductory physics and astronomy courses. Characteristics of extraterrestrial radio noise, sources of radio emission, our own and external galaxies, the sun, radio telescopes, and basic observational techniques. (Westerhout.)

**ASTR. 124. CELESTIAL MECHANICS. (3)**

Three lectures a week. Prerequisite, Physics 127 or consent of instructor. Celestial mechanics, orbit theory, equations of motion. (Musen.)

**ASTRONOMY 150. SPECIAL PROBLEMS IN ASTRONOMY.**

Given each semester. Prerequisite, major in physics or astronomy and or consent of adviser. Research or special study. Credit according to work done. (Staff.)

**ASTR. 190. HONORS SEMINAR**

Credit according to work done, each semester. Enrollment is limited to students admitted to the Honors Program in Astronomy. (Staff.)

**ASTR. 200. DYNAMICS OF STELLAR SYSTEMS. (3)**

First semester. Three lectures per week. Prerequisite, Physics 200 or Astr. 101. Theory of stellar encounters. Study of the structure and evolution of dynamical systems encountered in astronomy. (Van Wijk.)

**ASTR. 202. STELLAR INTERIORS. (3)**

Three lectures per week. Prerequisites, Math 114 and Physics 119 or consent of instructor. A study of stellar structure and evolution. (Bell.)

**ASTR. 203. STELLAR ATMOSPHERES. (3)**

Three lectures per week. Prerequisite, Physics 212 or consent of the instructor. Observational methods, line formation, curve of growth, equation of transfer, stars with large envelopes, variable stars, novae, magnetic fields in stars. (Erickson.)

**ASTR. 204. PHYSICS OF THE SOLAR SYSTEM. (3)**

Three lectures per week. Prerequisite, Physics 119. A survey of the problems of interplanetary space, planetary structure and atmosphere, physics of the earth's upper atmosphere, motions of particles in the earth's magnetic field. (Opik.)

**ASTR. 210. GALACTIC RADIO ASTRONOMY. (3)**

Three lectures per week. Prerequisites, Physics 119, Astr. 101 and 110 or consent of the instructor. Theory and observations of the continuum and 21 cm line emission from the Galaxy; galactic structure and the sources of radio emission. (Westerhout.)

## BOTANY

### ASTR. 212. THE SOLAR CORONA. (3)

Three lectures per week. Prerequisites, Physics 119, Astr. 102 and 110 or consent of the instructor. A detailed study of the radio emission from the sun. Physics of solar phenomena, such as solar flares, structure of the Corona, etc. (Erickson.)

### ASTR. 214. INTERSTELLAR MATTER. (3)

Three lectures per week. Prerequisites, previous or concurrent enrollment in Physics 213, Astr. 101 or Astr. 102 or consent of instructor. A study of the physical properties of interstellar gas and dust. (Smith.)

### ASTR. 230. SEMINAR. (1)

Seminars on various topics in advanced astronomy are held each semester, with the contents varied each year. One credit for each seminar each semester. (Staff.)

### ASTR. 248, 249. SPECIAL TOPICS IN MODERN ASTRONOMY.

Credit according to work done each semester. Prerequisite, consent of instructor. (Staff.)

### ASTR. 399. RESEARCH.

Credit according to work done, each semester. Laboratory fee, \$10 per credit hour. Prerequisite, an approved application for admission to candidacy or special permission of the Department of Physics and Astronomy. (Staff.)

## BOTANY

Students in the College of Arts and Sciences may select botany as a major field, and may also take courses in this Department for elective credits. For a description of courses, see the catalog of the College of Agriculture.



## CHEMISTRY

Laboratory fees in chemistry are \$12.00 per laboratory course per semester except for Chemistry 270, for which the fee is \$20.00.

*Professor and Head:* WHITE.

*Professors:* LIPPINCOTT, MASON\*, PRATT, REEVE, ROLLINSON, SVIRBELY, VANDERSLICE\*, VEITCH AND WOODS.

*Research Professor:* BAILEY.

*Associate Professors:* JAQUITH, PICKARD, PURDY AND STUNTZ.

*Assistant Professors:* ATKINSON, BOYD, CARRUTHERS, GORDON, GRIM, HENERY-LOGAN, KASLER, KRISHER\*, LAKSHMANAN, STEWART, AND WEISSMAN.\*

## ANALYTICAL CHEMISTRY

## CHEM. 15. QUALITATIVE ANALYSIS. (4)

Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 3. (Jaquith.)

## CHEM. 19. ELEMENTS OF QUANTITATIVE ANALYSIS. (4)

First and second semesters. Summer session. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 3. An introduction to the basic theory and techniques of volumetric and gravimetric analysis. Primarily for students in engineering, agriculture, pre-medical, and pre-dental curricula. (Purdy.)

## CHEM. 21. QUANTITATIVE ANALYSIS. (4)

Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 15. An intensive study of the theory and techniques of inorganic quantitative analysis, covering primarily volumetric methods. Required of all students majoring in chemistry. (Stuntz.)

## CHEM. 123. ADVANCED QUANTITATIVE ANALYSIS. (4)

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 187. A continuation of Chem. 21, including volumetric, gravimetric, electrometric, and colorimetric methods. Required of all students majoring in chemistry. (Purdy.)

## CHEM. 125. INSTRUMENTAL ANALYSIS. (4)

Second semester. Two lectures and six hours of laboratory per week. Prerequisites, Chem. 189, 190 or concurrent registration therein. A study of the application of physicochemical methods to analytical chemistry. Techniques

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\* Members of the Institute for Molecular Physics.

## CHEMISTRY

such as polarography, potentiometry, conductivity and spectrophotometry will be included. (Purdy.)

### CHEM. 150. ORGANIC QUANTITATIVE ANALYSIS. (2)

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, consent of the instructor. The semi-micro determination of carbon, hydrogen, nitrogen, halogen and certain functional groups. (Kasler.)

### CHEM. 166, 167. FOOD ANALYSIS. (3, 3)

First and second semesters. One lecture and two three-hour laboratory periods per week. Prerequisite, Chem. 33.

### CHEM. 206, 208. SPECTROGRAPHIC ANALYSIS. (1, 1)

One three-hour laboratory period per week. Registration limited. Prerequisites, Chem. 190 and consent of the instructor. (White.)

### CHEM. 221, 223. CHEMICAL MICROSCOPY. (2, 2)

First and second semesters. One lecture and one three-hour laboratory period per week. Registration limited. Prerequisite, consent of instructor. Chem. 221 is a prerequisite for Chem. 223. A study of the use of the microscope in chemistry. Chem. 223 is devoted to study of the optical properties of crystals. (Stuntz.)

### CHEM. 225. ADVANCED INSTRUMENTAL ANALYSIS. (4)

Second semester. Two lectures and six hours of laboratory per week. Prerequisites, Chem. 189, 190 or concurrent registration therein. An intensive study of physicochemical methods as applied to analytical chemistry. Laboratory work will include experiments in such fields as polarography, coulometry and amperometry, potentiometry and spectrophotometry, nephelometry. (Purdy.)

### CHEM. 226. SELECTED TOPICS IN ANALYTICAL CHEMISTRY. (4)

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisites, Chem. 125, 225, or consent of instructor. A study of advanced methods with emphasis on the modern techniques of analytical chemistry. (Purdy.)

### CHEM. 266. BIOLOGICAL ANALYSIS. (2)

Second semester. Two three-hour laboratory periods per week. Prerequisites, Chem. 19, 33. A study of analytical methods applied to biological material.

## BIOCHEMISTRY

### CHEM. 81. GENERAL BIOCHEMISTRY. (4)

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisites, Chem. 33, or Chem. 37, 38. This course is designed primarily for students in home economics. (Henery-Logan.)

### CHEM. 161, 163. BIOCHEMISTRY. (2, 2)

First and second semesters. Two lectures per week. Prerequisite, Chem. 33, or Chem. 37. This course is designed primarily for students in agriculture, bacteriology, or chemistry, and for those students in home economics who need a more extensive course in biochemistry than Chem. 81. (Henery-Logan.)

CHEM. 162, 164. BIOCHEMISTRY LABORATORY. (2, 2)

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, Chem. 33, or Chem. 38. (Henery-Logan.)

CHEM. 261, 263. ADVANCED BIOCHEMISTRY. (2, 2)

First and second semesters. Two lectures per week. Prerequisite, Chem. 143, or consent of instructor. (Veitch.)

CHEM. 262, 264. ADVANCED BIOCHEMISTRY LABORATORY. (2, 2)

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, consent of instructor. (Veitch.)

CHEM. 265. ENZYMES. (2)

First semester. Two lectures per week. Prerequisite, Chem. 163. (Veitch.)

CHEM. 267. THE CHEMISTRY OF NATURAL PRODUCTS. (2)

First or second semester. Two lectures per week. Prerequisite, Chem. 143. The chemistry and physiological action of natural products. Methods of isolation, determination of structure, and synthesis. (Henery-Logan.)

CHEM. 268. SPECIAL PROBLEMS IN BIOCHEMISTRY. (2-4)

First and second semesters. Two to four three-hour laboratory periods per week. Prerequisites, Chem. 161, 162 and consent of instructor. (Veitch.)

CHEM. 269. ADVANCED RADIOCHEMISTRY. (2)

Second semester. Two lectures per week. Prerequisite, Chem. 205 or consent of instructor. Utilization of radioisotopes with special emphasis on applications to problems in the life sciences. (Lakshmanan.)

CHEM. 270. ADVANCED RADIOCHEMISTRY LABORATORY. (1-2)

Second semester. One or two four-hour laboratory periods per week. Prerequisites, Chem. 210 and 269 (or concurrent registration in Chem. 269) and consent of instructor. Registration limited. Laboratory training in utilization of radioisotopes with special emphasis on applications to problems in life sciences. (Lakshmanan.)

CHEM. 271. SPECIAL TOPICS IN BIOCHEMISTRY. BIOCHEMISTRY OF LIPIDS. (2)

First or second semester. Two lectures per week. Prerequisite, Chem. 163. Classification and chemistry of lipids, lipoproteins and energy metabolism of lipids, structural lipids, and endocrine control of lipid metabolism in mammals. (Lakshmanan.)

CHEM. 273. SPECIAL TOPICS IN BIOCHEMISTRY. COMPARATIVE BIOCHEMISTRY. (2)

First or second semester. Two lectures per week. Prerequisite, Chem. 163. Energy sources and micronutrient requirements, gluconeogenesis, osmoregulation, nitrogen metabolism, detoxication and excretion, and comparative endocrinology. Deals with chordates only. (Lakshmanan.)

## CHEMISTRY

### INORGANIC AND GENERAL CHEMISTRY

#### CHEM. 1, 3. GENERAL CHEMISTRY. (4, 4)

First and second semesters. Summer session. Two lectures, one quiz, and two two-hour laboratory periods per week. Prerequisite, 1 year high school algebra or equivalent. (Staff.)

#### CHEM. 5. ADVANCED GENERAL CHEMISTRY. (4)

First semester. Three lectures and one three-hour laboratory period per week. Prerequisite, High School chemistry, placement in mathematics group I or II, and permission of the Chemistry Department. An advanced course in general chemistry for chemistry majors, which must be followed by Chem. 15. (Staff.)

#### CHEM. 11, 13. GENERAL CHEMISTRY. (3, 3)

Two lectures and one three-hour laboratory period per week. An abbreviated course in general chemistry for students in home economics and pre-nursing. This course is open only to students registered in home economics and pre-nursing. (Rollinson.)

#### CHEM. 17. EQUILIBRIUM AND STOICHIOMETRY. (2)

First semester. Two lectures per week. Prerequisite, Chem. 3. A systematical study of the equilibria and stoichiometry involved in acid-base, precipitation, complex formation, and oxidation-reduction reactions. Not open to students with credit in Chem. 19 or 21. (Stuntz.)

#### CHEM. 23. INORGANIC STRUCTURE AND CHEMICAL BONDING. (2)

Second semester. Two lectures per week. Prerequisite, Chem. 17, 19, or 21. Atomic structure, elementary molecular structure, chemical bonding from valence bond approach and from molecular orbital approach, bonding in coordination compounds, and the ionic bond. (Staff.)

#### CHEM. 101. ADVANCED INORGANIC CHEMISTRY. (3)

Second semester. Three lectures per week. Prerequisites, Chem. 187. (Staff.)

#### CHEM. 102. INORGANIC PREPARATIONS. (2)

Second semester. Two three-hour laboratory periods per week. Prerequisite, Chem. 123. (Boyd.)

#### CHEM. 111. CHEMICAL PRINCIPLES. (4)

Two lectures and two three-hour laboratory periods a week. Prerequisite, Chem. 3, or equivalent. Not open to students seeking a major in the physical sciences, since the course content is covered elsewhere in their curricula. A course in the principles of chemistry with accompanying laboratory work consisting of simple quantitative experiments. (Credit applicable only toward degree in College of Education.) (Jaquith.)

One or more courses of the group 201-213 will be offered each semester depending on demand.

#### CHEM. 201, 203. THE CHEMISTRY OF THE RARER ELEMENTS. (2, 2)

First and second semesters. Two lectures per week. (Gordon, White.)



## CHEMISTRY

### CHEM. 202, 204. ADVANCED INORGANIC LABORATORY. (2, 2)

First and second semesters. Two three-hour laboratory periods per week.  
(Boyd.)

### CHEM. 205. RADIOCHEMISTRY. (2)

Two lectures per week. (Rollinson.)

### CHEM. 207. CHEMISTRY OF COORDINATION COMPOUNDS. (2)

Two lectures per week. (Rollinson.)

### CHEM. 209. NON-AQUEOUS INORGANIC SOLVENTS. (2)

First or second semester. Two lectures per week. (Jaquith.)

### CHEM. 210. RADIOCHEMISTRY LABORATORY. (1-2)

One or two four-hour laboratory periods per week. Registration limited. Prerequisites, Chem. 205 (or concurrent registration therein), and consent of instructor. (Lakshmanan.)

### CHEM. 211, 213. SELECTED TOPICS IN INORGANIC CHEMISTRY. (2, 2)

First and second semesters. Two lectures a week. Prerequisite, Chem. 201, 203 or equivalent. An examination of some current topics in modern inorganic chemistry. (Boyd, Grim.)

## ORGANIC CHEMISTRY

### CHEM. 31, 33. ELEMENTS OF ORGANIC CHEMISTRY. (3, 3)

First and second semesters. Two lectures and one three-hour laboratory period per week. Prerequisite, Chem. 3. Organic chemistry for students in agriculture, bacteriology, and home economics. (Reeve.)

### CHEM. 35, 37. ELEMENTARY ORGANIC CHEMISTRY. (2, 2)

First and second semesters. Chem. 37, summer session. Two lectures per week. Prerequisite, Chem. 3. A course for chemists, chemical engineers, pre-medical students, and pre-dental students. (Woods.)

### CHEM. 36, 38. ELEMENTARY ORGANIC LABORATORY. (2, 2)

First and second semesters. Chem. 38, summer session. Two three-hour laboratory periods per week. Prerequisites, Chem. 35, 37, or concurrent registration therein. (Woods.)

### CHEM. 115. A SURVEY OF ORGANIC CHEMISTRY. (3)

Summer School only. Open ONLY to registrants in the National Science Foundation Summer Institute. Five one-hour lectures per week; five three-hour laboratory periods per week. A systematic survey of compounds of carbon at the elementary level.

### CHEM. 141, 143. ADVANCED ORGANIC CHEMISTRY. (2, 2)

First and second semesters. Two lectures per week. Prerequisites, Chem. 37, 38. An advanced study of the compounds of carbon. (Reeve.)

### CHEM. 144. ADVANCED ORGANIC LABORATORY. (2-4)

First and second semesters. Summer session. Two or four three-hour laboratory periods per week. Prerequisites, Chem. 37, 38. (Pratt.)

## CHEMISTRY

### CHEM. 146, 148. THE IDENTIFICATION OF ORGANIC COMPOUNDS. (2, 2)

First and second semesters. Two three-hour laboratory periods per week. Prerequisites, Chem. 141, 143, or concurrent registration therein. The systematic identification of organic compounds. (Pratt.)

One or more courses from the following group, 240-251, will customarily be offered each semester.

### CHEM. 240. ORGANIC CHEMISTRY OF HIGH POLYMERS. (2)

An advanced course covering the synthesis of monomers, mechanisms of polymerization, and the correlation between structure and properties in high polymers. (Bailey.)

### CHEM. 241. STEREOCHEMISTRY. (2)

Two lectures per week. (Woods.)

### CHEM. 245. THE CHEMISTRY OF THE STEROIDS. (2)

Two lectures per week. (Pratt.)

### CHEM. 249. PHYSICAL ASPECTS OF ORGANIC CHEMISTRY. (2)

Two lectures per week. (Woods.)

### CHEM. 251. THE HETEROCYCLICS. (2)

Two lectures per week. (Pratt.)

### CHEM. 254. ADVANCED ORGANIC PREPARATIONS. (2-4)

First and second semesters. Two or four three-hour laboratory periods per week. (Pratt.)

### CHEM. 258. THE IDENTIFICATION OF ORGANIC COMPOUNDS, AN ADVANCED COURSE. (2-4)

First and second semesters. Two to four three-hour laboratory periods per week. Prerequisites, Chem. 141, 143 or concurrent registration therein. (Pratt.)

## PHYSICAL CHEMISTRY

### CHEM. 187, 189. PHYSICAL CHEMISTRY. (3, 3)

First and second semesters. Three lectures per week. Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21; or consent of instructor. A course primarily for chemists and chemical engineers. This course must be accompanied by Chem. 188, 190. (Svirbely.)

### CHEM. 188, 190. PHYSICAL CHEMISTRY LABORATORY. (1-2, 1-2)

First and second semesters. Two three-hour laboratory periods per week. A laboratory course for students taking Chem. 187, 189. Graduate students may register for one or two hours' credit per semester. (Pickard.)

### CHEM. 188A. PHYSICAL CHEMISTRY LABORATORY. (2)

Similar to Chem. 188 but modified for majors in chemical engineering. Students who have had Chem. 19, 21, or equivalent cannot register for this course. (Pickard.)

**CHEM. 192, 194. GLASSBLOWING LABORATORY. (1, 1)**

First and second semesters. Summer session. One three-hour laboratory period per week. Prerequisite, consent of instructor. (Carruthers.)

**CHEM. 195. ADVANCED PHYSICAL CHEMISTRY. (2)**

Prerequisite, Chem. 189. Quantum chemistry and other selected topics. (Staff.)

The common prerequisites for the following courses are Chem. 187 and 189, or their equivalent. One or more courses of the group, 281 through 323, will be offered each semester depending on demand.

**CHEM. 281. THEORY OF SOLUTIONS. (2)**

First or second semester. Two lectures per week. Prerequisite, Chem. 307, or equivalent. (Svirbely.)

**CHEM. 285. COLLOID CHEMISTRY. (2)**

Two lectures per week. (Pickard.)

**CHEM. 287. INFRA-RED AND RAMAN SPECTROSCOPY. (2)**

Two lectures per week. Prerequisite, consent of instructor. (Lippincott.)

**CHEM. 295. HETEROGENEOUS EQUILIBRIA. (2)**

Two lectures per week. (Pickard.)

**CHEM. 299. REACTION KINETICS. (3)**

Three lectures per week. (Svirbely.)

**CHEM. 303. ELECTROCHEMISTRY. (3)**

Three lectures per week. (Pickard.)

**CHEM. 304. ELECTROCHEMISTRY LABORATORY. (2)**

Two three-hour laboratory periods per week. Prerequisite, consent of instructor. (Svirbely.)

**CHEM. 307. CHEMICAL THERMODYNAMICS. (3)**

Three lectures per week. (Pickard.)

**CHEM. 311. PHYSICOCHEMICAL CALCULATIONS. (2)**

Two lectures per week. (Pickard.)

**CHEM. 313. MOLECULAR STRUCTURE. (3)**

Three lectures per week.

**CHEM. 317. CHEMICAL CRYSTALLOGRAPHY. (3)**

Three lectures per week. Prerequisite, consent of instructor. A detailed treatment of single crystal x-ray methods. (Stewart.)

**CHEM. 319, 321. QUANTUM CHEMISTRY. (3, 3)**

First and second semesters. Three lectures per week. Prerequisite for Chem 319 is Chem. 195. Prerequisite for Chem. 321 is Chem. 319 or Physics 212. (Weissman, Vanderslice.)

## CLASSICAL LANGUAGES AND LITERATURES

### CHEM. 323. STATISTICAL MECHANICS AND CHEMISTRY. (3)

Three lectures per week. Prerequisite, Chem. 307, or equivalent.

(Mason.)

## SEMINAR AND RESEARCH

### CHEM. 199H. SPECIAL PROJECTS. (2)

Honors projects for undergraduate students.

(Staff.)

### CHEM. 351. SEMINAR. (1)

First and second semesters.

(Staff.)

### CHEM. 399. RESEARCH.

First and second semesters. Summer session.

(Staff.)

## CLASSICAL LANGUAGES AND LITERATURES

*Professor and Head:* AVERY.

*Assistant Professor:* HUBBE.

No placement tests are given in the Classical Languages. The following schedule will apply in general in determining the course level at which students will register for Latin and Greek. All students whose stage of achievement is not represented below are urgently invited to confer with the Head of the Department.

Students offering 0 or 1 unit of Latin will register for course 1.

Students offering 2 units of Latin will register for course 3.

Students offering 3 units of Latin will register for course 4.

Students offering 4 units of Latin will register for course 5.

No credit will be given for less than two semesters of Elementary Latin or Greek except as provided below in the course description of Latin 1, 2.

## LATIN

### LATIN 1, 2. ELEMENTARY LATIN. (3, 3)

First and second semesters. The essentials of Latin grammar, exercises in translation, composition, and connected reading. A student who has had two units of Latin in high school may register for Latin 1 for purposes of review, but not for credit; however, he may, under certain conditions, register for Latin 2 for credit with departmental permission.

(Hubbe and Avery.)

### LATIN 3. INTERMEDIATE LATIN. (3)

First and second semesters. Prerequisite, Latin 1, 2 or equivalent. Grammar review, Latin readings, and exercises in composition, followed by the reading of selections from Caesar's *Commentaries on the Gallic War*.

(Hubbe.)



**LATIN 4. INTERMEDIATE LATIN. (3)**

First and second semesters. Prerequisite, Latin 3 or equivalent. Selected orations of Cicero. (Hubbe.)

**LATIN 5. VERGIL'S AENEID. (3)**

First and second semesters. Prerequisite, Latin 4 or equivalent. Selections from Vergil's *Aeneid*. (Avery.)

**LATIN 51. HORACE. (3)**

Second semester. Prerequisite, Latin 5 or equivalent. Selected *Odes* and *Epodes* of Horace. (Avery.)

**LATIN 52. LIVY. (3)**

First semester. Prerequisite, Latin 51 or equivalent. Selections from Livy's history. (Avery.)

**LATIN 61. PLINY'S LETTERS. (3)**

Second semester. Prerequisite, Latin 52 or equivalent. Selected letters of Pliny the Younger. (Avery.)

**LATIN 70. GREEK AND ROMAN MYTHOLOGY. (3)**

Second semester. Taught in English, no prerequisite. A systematic study of the divinities of ancient Greece and Rome and the classical myths concerning them. *This course is particularly recommended for students planning to major in Foreign Languages, English, History, the Fine Arts, and Journalism.* (Avery.)

*For Advanced Undergraduates and Graduates*

Prerequisite for 100 level courses, Latin 61.

**LATIN 101. CATULLUS AND THE ROMAN ELEGIAC POETS. (3)**

Lectures and readings on Catullus as a writer of lyric, an imitator of the Alexandrianas, and as a writer of elegy, and on Tibullus, Propertius, and Ovid as elegists. The reading of selected poems of the four authors. Reports. (Avery.)

**LATIN 102. TACITUS. (3)**

Lectures and readings on Greek and Roman historiography before Tacitus and on the author as a writer of history. The reading of selections from the *Annals* and *Histories*. Reports. (Avery.)

**LATIN 103. ROMAN SATIRE. (3)**

Lectures and readings on the origins and development of Roman satire. The reading of selections from the satires of Horace, Petronius' *Cena Trimalchionis*, and the satires of Juvenal. Reports. (Avery.)

**LATIN 104. ROMAN COMEDY. (3)**

Lectures and readings on the origins and development of Roman comedy. The reading of selected plays of Plautus and Terence. Reports. (Avery.)

**LATIN 105. LUCRETIUS. (3)**

Lectures and readings on Greek and Roman Epicureanism. The reading of selections from the *De rerum natura*. Reports. (Avery.)

## CLASSICAL LANGUAGES AND LITERATURES

### LATIN 111. ADVANCED LATIN GRAMMAR. (3)

Prerequisite, three years of college Latin or equivalent. An intensive study of the morphology and syntax of the Latin language supplemented by rapid reading. (Avery.)

#### *For Graduates*

### LATIN 210. VULGAR LATIN READINGS. (3)

Summer session. Prerequisite, consent of instructor. An intensive review of the phonology, morphology, and syntax of Classical Latin, followed by the study of the deviations of Vulgar Latin from the classical norms, with the reading of illustrative texts. The reading of selections from the *Peregrinato ad loca sancta* and the study of divergences from classical usage therein, with special emphasis on those which anticipate subsequent developments in the Romance Languages. Reports. (Avery.)

## GREEK

### GREEK 1, 2. ELEMENTARY GREEK. (3, 3)

First and second semesters. The essentials of Greek grammar, exercises in translation, composition and connected reading. (Hubbe.)

### GREEK 3. INTERMEDIATE GREEK. (3)

First semester. Prerequisite, Greek 1, 2 or equivalent. Grammar review. Greek readings, and exercises in composition, followed by the reading of selections from the *Anabasis* of Xenophon. (Hubbe.)

### GREEK 4. INTERMEDIATE GREEK. (3)

Second semester. Prerequisite, Greek 3 or equivalent. Selections from the Homeric epics. See Greek 6. (Hubbe.)

### GREEK 5. HERODOTUS. (3)

First semester. Prerequisite, Greek 4 or equivalent. Selections from Herodotus' history of the Persian Wars. (Hubbe.)

### GREEK 6. THE NEW TESTAMENT. (3)

Second semester. Prerequisite, Greek 3 or equivalent. Greek 6 will be substituted for Greek 4 upon demand of a sufficient number of students. The study of New Testament Greek and its deviations from Classical Greek. The reading of selections from the four Gospels. (Hubbe.)

### GREEK 51. EURIPIDES. (3)

Second semester. Prerequisite, Greek 5 or equivalent. Selected plays of Euripides. (Hubbe.)

### GREEK 52. PLATO (3)

First semester. Prerequisite, Greek 51 or equivalent. Selected dialogues of Plato. (Avery.)

## COMPARATIVE LITERATURE

*Professor and Director of the Program:* ALDRIDGE.

*Professors:* COOLEY, GOODWYN, JONES, PRAHL.

*Associate Professor:* FRIEDMAN.

*Assistant Professor:* PANICHAS.

Students may major in Comparative Literature. Also courses in Comparative Literature may be counted toward a major or minor in English when recommended by the student's major advisor.

*For Advanced Undergraduates and Graduates*

COMP. LIT. 101, 102. INTRODUCTORY SURVEY OF COMPARATIVE LITERATURE. (3, 3)

First semester. Survey of the background of Europe's literature through study of Greek and Latin literature in English translations, discussing the debt of modern literature to the ancients. Second semester: Study of medieval and modern continental literature. (Friedman.)

COMP. LIT. 103. THE OLD TESTAMENT AS LITERATURE. (3)

First semester. A study of the sources, development and literary types. (Panichas.)

COMP. LIT. 105. ROMANTICISM IN FRANCE. (3)

First semester. Lectures and readings in the French romantic writers from Rousseau to Baudelaire. Texts are read in English translations. (Parsons.)

COMP. LIT. 106. ROMANTICISM IN GERMANY. (3)

Second semester. Continuation of Comp. Lit. 105. German literature from Buerger to Heine in English translations. (Prahl.)

COMP. LIT. 107. THE FAUST LEGEND IN ENGLISH AND GERMAN LITERATURE. (3)

Second semester. A study of the Faust legend of the Middle Ages and its later treatment by Marlowe in *Dr. Faustus* and by Goethe in *Faust*. (Prahl.)

COMP. LIT. 112. IBSEN. (3)

First semester. A study of the life and chief work of Henrik Ibsen with special emphasis on his influence on the modern drama.

COMP. LIT. 114. THE GREEK DRAMA. (3)

First semester. The chief works of Aeschylus, Sophocles, Euripides, and Aristophanes in English translations. Emphasis on the historic background, on dramatic structure, and on the effect of the Attic drama upon the mind of the civilized world. (Prahl.)

## ECONOMICS

### COMP. LIT. 125. LITERATURE OF THE MIDDLE AGES. (3)

Narrative, dramatic, and lyric literature of the Middle Ages studied in translation. (Cooley.)

### COMP. LIT. 130. THE CONTINENTAL NOVEL. (3)

First semester. The novel in translation from Stendhal through the Existentialists, selected from literatures of France, Germany, Italy, Russia, and Spain. (Friedman.)

### COMP. LIT. 150. CONFERENCE COURSE IN COMPARATIVE LITERATURE (3)

Second semester. A tutorial type discussion course correlating the courses in various literatures which the student has previously taken with the primary themes and masterpieces of world literature. This course is required of undergraduate majors in comparative literature, but must not be taken until the final year of the student's program. (Friedman.)

### *For Graduates*

### COMP. LIT. 201. PROBLEMS IN COMPARATIVE LITERATURE. (3)

Second semester. A research seminar for M.A. candidates only. (Aldridge.)

### COMP. LIT. 225. THE MEDIEVAL EPIC. (3)

Second semester. A comparative interpretation of *Beowulf*, the *Waltharius*, the *Chanson de Roland*, the *Nibelungenlied*, and the *Cid*. (Jones.)

### COMP. LIT. 258. FOLKLORE IN LITERATURE. (3)

A study of folk heroes, motifs, and ideas as they appear in the world's masterpieces. (Goodwyn.)

### COMP. LIT. 301. SEMINAR IN THEMES AND TYPES. (3)

First semester. Prerequisite, one year's work in the literature and the knowledge of one language other than English. Intensive study of fundamental motifs and trends in western literature. (Aldridge.)

## ECONOMICS

Students in the College of Arts and Sciences may select economics as a major field, and may also take courses in this department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.



# ENGLISH LANGUAGE AND LITERATURE

*Professor and Head:* MURPHY.

*Professors:* ALDRIDGE, BODE, COOLEY, HARMAN (EMERITUS), MANNING, McMANAWAY (P.T.) AND ZEEVELD.

*Associate Professors:* ANDREWS, BARNES, BEALL, FLEMING, GRAVELY, HOVEY, JERMAN, LUTWACK, MISH, MYERS, WARD, AND WEBER.

*Assistant Professors:* BROWN, CHAYES, COOPER, COULTER, HERMAN, MARTIN, PANICHAS, PORTZ, SCHAUMANN, SMITH, AND THORBERG.

*Instructors:* BIRDSALL, BUHLIG, CROZIER, CUSHMAN (P.T.), DACHSLAGER, DEMAREE, DUNN, EIKEL, (P.T.), GOCHBERG, GREENWOOD, GRIMES, (P.T.), HAN, HARE, HOLTON, HORRELL, HOUPPERT, HOWARD, HUNTRESS, (P.T.), JAMES, JELLEMA, KARR, KENNEY, LAWSON, LEMELIN, MERKEL, MONCADA (P.T.), MOREINES (P.T.), NELSON, PALMER, ROGERS, ROULSTON, SCHAFER, SEIGEL (P.T.), SIMPSON, E., SIMPSON, H. (P.T.), STEVENSON, STONE, TROUSDALE (P.T.), WALT, WHALEY, AND WILSON.

*Lecturer:* KORIN.

## ENG. 1, 2. COMPOSITION AND AMERICAN LITERATURE. (3, 3)

First and second semesters. Summer session. Required of freshmen. Eng. 1 is the prerequisite of Eng. 2. See Eng. 21. Grammar, rhetoric, and the mechanics of writing; frequent themes. Readings are in American literature.

(Barnes, Staff.)

## ENG. 3, 4. COMPOSITION AND WORLD LITERATURE. (3, 3)

First and second semesters. Summer session. Prerequisite, Eng. 2 or 21. Required of sophomores. Practice in composition. An introduction to world literature. foreign classics being read in translation.

(Cooley, Staff.)

## ENG. 7. TECHNICAL WRITING. (2)

Second semester. Prerequisite, Eng. 2 or 21. For students desiring practice in writing reports, technical essays, or popular essays on technical subjects.

(Coulter, Walt.)

## ENG. 8. COLLEGE GRAMMAR. (3)

First and second semesters. Prerequisites, Eng. 2 or 21. An analytical study of modern English grammar.

(James, Staff.)

## ENG. 9. INTRODUCTION TO NARRATIVE LITERATURE (3)

Second semester. Prerequisite, Eng. 2 or 21. An intensive study of representative stories, with lectures on the history and technique of the short story and other narrative forms.

(Herman.)

## ENG. 12. INTRODUCTION TO CREATIVE WRITING. (3)

First and second semesters. Prerequisite, Eng. 2 or 21.

(Portz, Jellema.)

## ENG. 14. EXPOSITORY WRITING. (3)

Not offered on College Park campus. Prerequisite, Eng. 2 or 21. Credit will not be given for Eng. 7 in addition to Eng. 14. Methods and problems of exposition; practice in several kinds of informative writing.

## ENGLISH LANGUAGE AND LITERATURE

### ENG. 15. READINGS IN BIOGRAPHY. (3)

First semester. Prerequisite, Eng. 2 or 21. An analytical study in the form and technique of biographical writing in Europe and America. (Ward.)

### ENG. 21. ADVANCED FRESHMAN COMPOSITION AND LITERATURE. (3)

First and second semesters. Replaces the Eng. 1 and 2 requirement for students exempt from Eng. 1. Includes a survey of fundamentals covered in Eng. 1 in addition to material comparable to that of Eng. 2. (Thorberg, Staff.)

### ENG. 55. ENGLISH LITERATURE FROM THE BEGINNINGS TO 1800. (3)

First and second semesters. Prerequisite, Eng. 2 or 21. (Smith, Staff.)

### ENG. 56. ENGLISH LITERATURE FROM 1800 TO THE PRESENT. (3)

First and second semesters. Prerequisite, Eng. 2 or 21. (Smith, Staff.)

### *For Advanced Undergraduates and Graduates*

Eng 4 and junior standing are prerequisite to courses numbered 101 to 199.

### ENG. 101. HISTORY OF THE ENGLISH LANGUAGE. (3)

First and second semesters. (Herman, James.)

### ENG. 102. OLD ENGLISH. (3)

First semester. (Staff.)

### ENG. 104. CHAUCER. (3)

First semester. The Canterbury Tales, Troilus and Criseyde, and the principal minor poems. (Cooley.)

### ENG. 107. AMERICAN ENGLISH. (3)

Second semester. The English language as developed in the United States. Dialects, vocabulary, past and present problems of usage. (Herman.)

### ENG. 110, 111. ELIZABETHAN AND JACOBEOAN DRAMA. (3, 3)

First and second semesters. (Zeeveld, Mish.)

### ENG. 112, 113. LITERATURE OF THE RENAISSANCE. (3, 3)

First and second semesters. (Zeeveld, Mish.)

### ENG. 115, 116. SHAKESPEARE. (3, 3)

First and second semesters. Twenty-one important plays. (Zeeveld.)

### ENG. 120. ENGLISH DRAMA FROM 1660 TO 1800. (3)

Second semester. The important dramatists from Wycherley to Sheridan, with emphasis upon the comedy of manners. (Ward.)

### ENG. 121. MILTON. (3)

Second semester. (Murphy.)

### ENG. 122. LITERATURE OF THE SEVENTEENTH CENTURY, 1600-1660. (3)

First semester. The major non-dramatic writers (exclusive of Milton). (Murphy, Mish.)

## ENGLISH LANGUAGE AND LITERATURE

- ENG. 123. LITERATURE OF THE SEVENTEENTH CENTURY, 1660-1700. (3)  
Second semester. The Age of Dryden, with the exception of the drama. (Mish.)
- ENG. 125, 126. LITERATURE OF THE EIGHTEENTH CENTURY. (3, 3)  
First and second semesters. (Myers.)
- ENG. 129, 130. LITERATURE OF THE ROMANTIC PERIOD. (3, 3)  
First and second semesters. (Weber, Smith.)
- ENG. 134, 135. LITERATURE OF THE VICTORIAN PERIOD. (3, 3)  
First and second semesters. (Jerman, Brown.)
- ENG. 139, 140. THE ENGLISH NOVEL. (3, 3)  
First and second semesters. (Ward, Jerman.)
- ENG 141. MAJOR BRITISH WRITERS. (3)  
First and second semesters. Two writers studied intensively each semester.  
(Fleming, Panichas.)
- ENG. 143. MODERN POETRY. (3)  
First semester. The chief British and American poets of the twentieth century.  
(Fleming.)
- ENG. 144. MODERN DRAMA. (3)  
First semester. The drama from Ibsen to the present. (Weber.)
- ENG. 145. THE MODERN NOVEL. (3)  
First and second semesters. Major English and American novelists of the twentieth century.  
(Andrews, Panichas.)
- ENG. 148. THE LITERATURE OF AMERICAN DEMOCRACY. (3)  
Second semester. (Barnes.)
- ENG. 150, 151. AMERICAN LITERATURE. (3, 3)  
First and second semesters. Representative American poetry and prose from colonial times to the present with special emphasis on the literature of the nineteenth century.  
(Gravely, Hovey, Beall, Thorberg.)
- ENG. 152. THE NOVEL IN AMERICA. (3)  
First semester. A historical survey of the development of the American novel from its eighteenth century beginnings to the twentieth century. (Hovey.)
- ENG. 155, 156. MAJOR AMERICAN WRITERS. (3, 3)  
First and second semesters. Two writers studied intensively each semester.  
(Gravely, Lutwack, Portz.)
- ENG. 157. INTRODUCTION TO FOLKLORE. (3)  
First semester. Historical background of folklore studies; types of folklore with particular emphasis on folktales and folksongs, and on American folklore.  
(Cooley, Birdsall.)
- ENG. 160. ADVANCED EXPOSITORY WRITING. (3)  
Second semester. Theories of composition; practice in writing essays and critical papers.  
(Myers, Staff.)

## ENGLISH LANGUAGE AND LITERATURE

### ENG. 170. CREATIVE WRITING. (3)

First semester.

(Fleming.)

### ENG. 171. ADVANCED CREATIVE WRITING. (3)

Second semester. Prerequisite, permission of the instructor.

(Fleming.)

### ENG. 172. PLAYWRITING. (3)

Second semester. Prerequisite, permission of the instructor.

(Fleming.)

### ENG. 190, 191. HONORS CONFERENCE AND READING. (1, 1)

Second semester. Prerequisite, candidacy for honors in English. Candidates will take Eng. 190 in their junior year and Eng. 191 in their senior year. (Staff.)

### ENG. 199. SENIOR PROSEMINAR IN LITERATURE. (3)

Open only to seniors. First semester. Required of candidates for honors and strongly recommended to those who plan to do graduate work. Individual reading assignments; term paper. (Staff.)

### *For Graduates*

### ENG. 201. BIBLIOGRAPHY AND METHODS. (3)

First semester. An introduction to the principles and methods of research.

(Mish, Hovey.)

### ENG. 202. MIDDLE ENGLISH. (3)

Second semester.

(Cooley.)

### ENG. 204. SEMINAR IN MEDIEVAL LITERATURE. (3)

First semester.

(Cooley.)

### ENG. 206, 207. SEMINAR IN RENAISSANCE LITERATURE. (3, 3)

First and second semesters.

(McManaway, Zeeveld.)

### ENG. 210. SEMINAR IN SEVENTEENTH CENTURY LITERATURE. (3)

Second semester.

(Mish.)

### ENG. 212, 213. SEMINAR IN EIGHTEENTH-CENTURY LITERATURE. (3, 3)

First and second semesters.

(Aldridge.)

### ENG. 214, 215. SEMINAR IN NINETEENTH-CENTURY LITERATURE. (3)

First and second semesters.

(Jerman.)

### ENG. 216, 217. LITERARY CRITICISM. (3, 3)

First and second semesters.

(Lutwack.)

### ENG. 218. SEMINAR IN LITERATURE AND THE OTHER ARTS. (3)

(Myers.)

### ENG. 225, 226. SEMINAR IN AMERICAN LITERATURE. (3, 3)

First and second semesters.

(Bode, Hovey.)

### ENG. 227, 228. PROBLEMS IN AMERICAN LITERATURE. (3, 3)

First and second semesters.

(Aldridge.)



## FOREIGN LANGUAGES AND LITERATURES

### ENG. 230. SPECIAL STUDIES IN ENGLISH LITERATURE. (3)

Individual reading projects in literary works and related scholarship of a limited period; conferences, reports. (Staff.)

### ENG. 231. SPECIAL STUDIES IN AMERICAN LITERATURE. (3)

Individual reading projects in literary works and related scholarship of a limited period; conferences; reports. (Lutwack.)

### ENG. 241, 242. STUDIES IN TWENTIETH-CENTURY LITERATURE. (3, 3)

First and second semesters. (Bode, Hovey.)

### ENG. 399. THESIS RESEARCH. (1-6)

Arranged. (Staff.)

## FOREIGN LANGUAGES AND LITERATURES

*Professor and Head:* ALDEN.

*Professors:* FALLS, GOODWYN, JONES, PRAHL, QUINN, RAND, SMITH, AND ZUCKER (EMERITUS).

*Visiting Professors:* DRESDEN, SALVADOR.

*Associate Professors:* ALTER, BINGHAM, DOBERT, HERING, KRAMER (EMERITUS), NEMES, PARSONS, AND ROSENFELD.

*Assistant Professors:* BRIDGERS, CHEN, GREENBERG (P.T.), HALL, HITCHCOCK, MENDELOFF, NORTON, ROSWELL, ROVNER, SCHRADIECK, AND VOGELGESANG.

*Lecturer:* JOHNSON.

*Instructors:* AMENT (P.T.), ARMSTRONG, BARRABINI, BIERZNIKS (P.T.), BOYD, CAP, CAROZZA, CHRISTOV, CLEMENS (P.T.), DEMAITRE, HALL, HERDOIZA, JOHNSON, KEMNER, LEMAIRE (P.T.), MESSERMAN, MONCAYO, PANICO, RODRIGUEZ, SAENZ (P.T.), SIELECKI-DZURZ, SONNTAG, VAN WYCK (P.T.), VASSYLKIVSKY, WINTER (P.T.), AND ZINOVIEFF.

At the beginning of each semester a placement examination is given for all students who have had some foreign language in high school and wish to do further work in that language. By this means the Department assigns each student to the suitable level of instruction. Any student who fails to qualify for the second semester of his language will be required to register for the first without credit or register for a different language (Students who wish to continue Latin should consult the section on classical languages elsewhere in these pages).

No credit will be given for the elementary first semester (1) alone unless followed by further study.

German 9 is not to be taken to meet the college requirement of 12 hours of language unless the student has finished German 7 or German 8.

## FOREIGN LANGUAGES AND LITERATURES

A student whose native language is taught at the University may not meet the language requirement by taking freshman or sophomore courses in his language.

Attention is called to the courses in comparative literature elsewhere in these pages.

### FOREIGN LANGUAGE 1-2. ENGLISH FOR FOREIGN STUDENTS. (3, 3)

First and second semesters. An introduction to English usage, adapted to the needs of the non-English-speaking student. Pronunciation, spelling, syntax; the differences between English and various other languages are stressed.

(Bridgers.)

### FOREIGN LANGUAGE 140. ORAL PRACTICE IN MODERN FOREIGN LANGUAGES. (FRENCH, GERMAN, RUSSIAN, OR SPANISH). (3)

Development of fluency in modern foreign languages, stress on correct sentence structure and idiomatic expression. Especially designed for teachers, or for practice in speaking the language.

(Rovner, Staff.)

### FOREIGN LANGUAGE 171. ADVANCED PHONETICS (FRENCH). (3)

First semester. Pronunciation of modern French. The sounds and their production, the stress group, intonation.

(Hall.)

Attention is called to Ed. 142 and Ed. 143.

## FRENCH

### FRENCH 0. ELEMENTARY FRENCH FOR GRADUATE STUDENTS.

#### (0 OR AUDIT)

First and second semesters. Summer session. Intensive elementary course in the French language designed particularly for graduate students who wish to acquire a reading knowledge.

(Hall.)

### FRENCH 1-2. ELEMENTARY FRENCH. (3, 3)

First and second semesters. Given as intensive course in summer session. Two recitations and two audio-lingual drills per week. Study of linguistic structure and development of audio-lingual and writing ability.

(Cap, Staff.)

### FRENCH 3. ELEMENTARY FRENCH, HONORS COURSE. (3)

First and second semesters. Two recitations and two audio-lingual drills per week. Enrollment limited to specially approved candidates from French 1. Students taking this course will normally continue in French 7.

(Alter.)

### FRENCH 5. REVIEW OF ELEMENTARY FRENCH. (3)

First and second semesters. Two recitations and two audio-lingual drills per week, or three recitations and one audio-lingual drill, depending on circumstances. Enrollment limited to students who, having taken placement examination, have failed to qualify for French 6.

(Hall, Staff.)

### FRENCH 6-7. INTERMEDIATE FRENCH. (3, 3)

First and second semesters. Three recitations per week; additional electronic laboratory in French 6. Given as intensive course in summer session. Prerequisite: French 2 or equivalent, or French 5, except that recommended students

## FOREIGN LANGUAGES AND LITERATURES

may enter French 7 from French 3. Study of linguistic structure, further development of audio-lingual and writing ability and reading of literary texts with discussion in French. Usually there will be an honors section for qualified students. (Bingham, Staff.)

### FRENCH 10. SCIENTIFIC FRENCH. (3)

First and second semesters. Prerequisite: French 7. Reading of technical and scientific prose with some attention to audio-lingual and linguistic objectives (Staff.)

### FRENCH 11. INTRODUCTION TO FRENCH LITERATURE. (3)

First and second semesters. Prerequisite: French 7. Required of all students who continue in advanced courses of Department, with the exception of superior students who are permitted to bypass an introduction to French literature. (Falls, Staff.)

### FRENCH 12. CONVERSATION AND COMPOSITION. (3)

First and second semesters. Prerequisite: French 7. A practical language course recommended for all students continuing in French. May be taken concurrently with French 11. (Alter, Staff.)

### *For Advanced Undergraduates*

### FRENCH 41-42. FRENCH PHONETICS. (1, 1)

First and second semesters. Prerequisite: French 7 or equivalent. Elements of French phonetics, diction and intonation. (Hall.)

### FRENCH 71-72. REVIEW GRAMMAR AND COMPOSITION. (3, 3)

First and second semesters. Prerequisite: French 11 and 12 or equivalent. For students who, having a good knowledge of French, wish to become more proficient in the written and spoken language. (Bingham, Vassylkivsky.)

### FRENCH 75-76. SURVEY OF FRENCH LITERATURE. (3, 3)

First and second semesters. Prerequisite: French 11 or equivalent. An elementary survey of the chief authors and movements in French literature. (Quynn, Rosenfield.)

### FRENCH 80-81. ADVANCED CONVERSATION. (3, 3)

First and second semesters. Prerequisite: French 11 and 12 or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Alter.)

### *For Advanced Undergraduates and Graduates*

### FRENCH 101. APPLIED LINGUISTICS. (3)

The nature of Applied Linguistics and its contributions to the effective teaching of foreign languages. Comparative study of English and French, with emphasis upon points of divergence. Analysis, evaluation and construction of related drills. (Mendeloff.)

### FRENCH 103-104. ADVANCED COMPOSITION. (3, 3)

First and second semesters. Translation from English into French, free composition, practical study of syntactical structure. (Alden.)

## FOREIGN LANGUAGES AND LITERATURES

### FRENCH 107. INTRODUCTION TO MEDIEVAL LITERATURE. (3)

French literary history from the ninth through the fifteenth century, selected readings from representative texts. (Mendeloff.)

### FRENCH 111. FRENCH LITERATURE OF THE SIXTEENTH CENTURY. (3)

The Renaissance in France: humanism; Rabelais and Calvin; the Pleiade; Montaigne. (Falls.)

### FRENCH 115-116. FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. (3, 3)

First and second semesters. First semester: Descartes, Pascal, Corneille, Racine. Second semester: the remaining great classical writers, with special attention to Moliere. (Quynn, Rosenfield.)

### FRENCH 125-126. FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. (3, 3)

First and second semesters. First semester: development of the philosophical and scientific movement; Montesquieu. Second semester: Voltaire, Diderot, Rousseau. (Falls, Bingham.)

### FRENCH 131-132. FRENCH LITERATURE OF THE NINETEENTH CENTURY. (3, 3)

First and second semesters. First semester: drama and poetry from Romanticism to Symbolism. Second semester: the major prose writers of the same period. (Alter.)

### FRENCH 141-142. FRENCH LITERATURE OF THE TWENTIETH CENTURY. (3, 3)

First and second semesters. First semester: drama and poetry from Symbolism to the present time. Second semester: the contemporary novel. (Alter, Alden.)

### FRENCH 171-172. FRENCH CIVILIZATION. (3, 3)

First and second semesters. French life, customs, culture, traditions. First semester: the historical development. Second semester: present-day France. (Cap.)

### FRENCH 195, 196, 197. HONORS READING COURSE. (3, 3, 3)

Supervised readings to be taken only by students admitted to Honors Program. (Staff.)

### FRENCH 199. HONORS SEMINAR. (3)

Required of all students in the Honors Program. Other students will be admitted on special recommendation. Conducted in French. Discussion of a central theme with related investigations by students. (Staff.)

### *For Graduates*

The requirements of students will determine which courses will be offered.

### FRENCH 201. THE HISTORY OF THE FRENCH LANGUAGE. (3)

(Smith, Mendeloff.)



## FOREIGN LANGUAGES AND LITERATURES

- FRENCH 203. COMPARATIVE ROMANCE LINGUISTICS. (3)  
 Same as Spanish 203. (Smith, Mendeloff.)
- FRENCH 207. ELEMENTARY OLD FRENCH. (3)  
 (Smith.)
- FRENCH 208. OLD FRENCH PHONOLOGY AND MORPHOLOGY. (3)  
 (Smith.)
- FRENCH 209. MEDIEVAL FRENCH CULTURE. (3)  
 (Smith.)
- FRENCH 210. ELEMENTARY OLD PROVENÇAL. (3)  
 (Smith.)
- FRENCH 211-212. SEMINAR IN FRENCH CLASSICISM. (3, 3)  
 (Quynn.)
- FRENCH 220-221. THE AGE OF ENLIGHTENMENT. (3, 3)  
 (Bingham.)
- FRENCH 230. SEMINAR IN ROMANTICISM. (3)  
 (Quynn.)
- FRENCH 235-236. THE REALISTIC NOVEL IN THE NINETEENTH CENTURY.  
 (3, 3)  
 (Alter.)
- FRENCH 243-244. THE CONTEMPORARY FRENCH THEATER. (3, 3)  
 (Falls.)
- FRENCH 245-246. SEMINAR IN THE CONTEMPORARY NOVEL. (3, 3)  
 (Alden.)
- FRENCH 251-252. THE HISTORY OF IDEAS IN FRANCE. (3, 3)  
 (Rosenfield.)
- FRENCH 271-272. ADVANCED WRITING AND STYLISTICS. (3, 3)  
 (Alden.)
- FRENCH 281-282. READING COURSE. (3, 3)  
 (Staff.)
- FRENCH 291-292. SEMINAR. (3, 3)  
 Topic to be determined. (Staff.)
- FRENCH 399. RESEARCH. (1-6)  
 Credits determined by work accomplished. Guidance in the preparation of master's and doctoral theses. Conferences. (Staff.)

## FOREIGN LANGUAGES AND LITERATURES

### GERMAN

#### GERMAN 0. ELEMENTARY GERMAN FOR GRADUATE STUDENTS. (0 OR AUDIT)

First and second semesters. Summer session. Intensive elementary course in the German language designed particularly for graduate students who wish to acquire a reading knowledge. (Staff.)

#### GERMAN 1-2. ELEMENTARY GERMAN. (3, 3)

First and second semesters. Given as intensive course in summer session. Three recitations and one audio-lingual drill per week. Study of linguistic structure. Extensive drill in pronunciation and conversation. (Jones, Staff.)

#### GERMAN 3. ELEMENTARY GERMAN, HONORS COURSE. (3)

First and second semesters. Three recitations and one audio-lingual drill per week. Enrollment limited to specially approved candidates from German 1. Students taking this course will normally continue in German 7. (Roswell.)

#### GERMAN 5. REVIEW OF ELEMENTARY GERMAN. (3)

First and second semesters. Three recitations and one audio-lingual drill per week. Limited to students who, having taken placement examination, have failed to qualify for German 6. (Jones.)

#### GERMAN 6-7. INTERMEDIATE LITERARY GERMAN. (3, 3)

First and second semesters. Three recitations per week; additional electronic laboratory in German 6. Given as intensive course in summer session. Prerequisite: German 2 or equivalent, or German 5, except that recommended students may enter German 7 from German 3. Usually there will be an honors section for qualified students. (Roswell, Staff.)

#### GERMAN 8. SCIENTIFIC GERMAN. (3)

First and second semesters. Prerequisite: German 6. Reading of technical and scientific prose. (Roswell, Staff.)

#### GERMAN 9. CONVERSATION AND COMPOSITION. (3)

First and second semesters. Prerequisite: German 7, or 6 with consent of the instructor. A practical language course recommended for all students continuing in German. (Demaitre, Staff.)

### *For Advanced Undergraduates*

#### GERMAN 71-72. REVIEW GRAMMAR AND COMPOSITION. (3, 3)

First and second semesters. Prerequisite: German 7, or equivalent. A thorough study of the more detailed points of German grammar with ample practice in composition. (Staff.)

#### GERMAN 75-76. SURVEY OF GERMAN LITERATURE. (3, 3)

First and second semesters. Prerequisite: German 7, or equivalent. A survey of the chief authors and movements in German literature. (Hering, Staff.)

#### GERMAN 80-81. ADVANCED CONVERSATION. (3, 3)

First and second semesters. Prerequisite: German 7 and 9, or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Dobert, Staff.)

## FOREIGN LANGUAGES AND LITERATURES

### *For Advanced Undergraduates and Graduates*

#### GERMAN 103-104. ADVANCED COMPOSITION. (3, 3)

First and second semesters. Translation from English into German, free composition, letter writing. (Jones, Staff.)

#### GERMAN 125-126. GERMAN LITERATURE OF THE EIGHTEENTH CENTURY. (3, 3)

First and second semesters. The main works of Klopstock, Wieland, Lessing, Herder, Goethe, Schiller. (Hering, Staff.)

#### GERMAN 131-132. GERMAN LITERATURE OF THE NINETEENTH CENTURY. (3, 3)

First and second semesters. Study of the literary movements from romanticism to naturalism. (Prah, Staff.)

#### GERMAN 141-142. GERMAN LITERATURE OF THE TWENTIETH CENTURY. (3, 3)

First and second semesters. Prose and dramatic writings from Gerhart Hauptmann to the present. Modern literary and philosophical movements will be discussed. (Dobert, Staff.)

#### GERMAN 171-172. GERMAN CIVILIZATION. (3, 3)

First and second semesters. Study of the literary, educational, artistic traditions; great men, customs, and general culture. (Dobert, Staff.)

#### GERMAN 191. BIBLIOGRAPHY AND METHODS. (3)

Second semester. Especially designed for German majors. (Staff.)

#### GERMAN 195-196-197. HONORS READING COURSE. (3, 3, 3)

Supervised reading to be taken only by students admitted to Honors Program. (Staff.)

#### GERMAN 199. HONORS SEMINAR. (3)

Required of all students in the Honors Program. Other students will be admitted on special recommendation. Conducted in German. Discussion of a central theme with related investigations by students. (Staff.)

### *For Graduates*

The requirements of students will determine which course will be offered.

#### GERMAN 201. HISTORY OF THE GERMAN LANGUAGE. (3)

(Anderson, Jones.)

#### GERMAN 203. GOTHIC. (3)

(Anderson, Jones.)

#### GERMAN 204. OLD HIGH GERMAN. (3)

(Anderson, Jones.)

#### GERMAN 205. MIDDLE HIGH GERMAN. (3)

(Anderson, Jones.)

## FOREIGN LANGUAGES AND LITERATURES

### GERMAN 207. LITERATURE OF OLD HIGH GERMAN AND MIDDLE HIGH GERMAN. (3)

(Anderson, Jones.)

### GERMAN 211-212. LITERATURE OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. (3, 3)

(Hering.)

### GERMAN 224-225. GOETHE AND HIS TIME. (3, 3)

(Hering.)

### GERMAN 226. SCHILLER. (3)

(Prahl.)

### GERMAN 230. GERMAN ROMANTICISM. (3)

(Prahl.)

### GERMAN 234. THE GERMAN DRAMA OF THE NINETEENTH CENTURY. (3)

(Dobert.)

### GERMAN 250. THE GERMAN LYRIC. (3)

(Hering.)

### GERMAN 281-282. READING COURSE. (3, 3)

(Dobert.)

### GERMAN 291-292. SEMINAR. (3, 3)

Topic to be determined.

(Staff.)

### GERMAN 399. RESEARCH. (1-6)

Credits determined by work accomplished. Guidance in preparation of master's and doctoral theses. Conferences.

(Staff.)

## SPANISH

### SPANISH 1-2. ELEMENTARY SPANISH. (3, 3)

First and second semesters. Given as intensive course in summer session. Three recitations and one laboratory hour per week. Study of linguistic structure and development of audio-lingual and writing ability.

(Rovner, Staff.)

### SPANISH 3. ELEMENTARY SPANISH, HONORS COURSE. (3)

First and second semesters. Three recitations and one laboratory hour per week. Enrollment limited to specially approved candidates from Spanish 1. Students taking this course will normally continue in Spanish 7.

(Staff.)

### SPANISH 5. REVIEW OF ELEMENTARY SPANISH. (3)

First and second semesters. Three recitations and one laboratory hour per week. Enrollment limited to students who, having taken the placement examination, have failed to qualify for Spanish 6.

(Armstrong.)

### SPANISH 6-7. INTERMEDIATE SPANISH. (3, 3)

First and second semesters. Three recitations per week; additional electronic laboratory in Spanish 6. Given as intensive course in summer session. Pre-



## FOREIGN LANGUAGES AND LITERATURES

requisite: Spanish 2 or equivalent, or Spanish 5, except that recommended students may enter Spanish 7 from Spanish 3. Study of linguistic structure, further development of audio-lingual and writing ability, and reading of literary texts with discussion in Spanish. Usually there will be an honors section for qualified students.  
(Panico, Staff.)

### SPANISH 11. INTRODUCTION TO SPANISH LITERATURE. (3)

First and second semesters. Prerequisite: Spanish 7. Required of all students who continue in advanced courses of Department, with the exception of superior students who are permitted to bypass an introduction to Spanish literature. Conducted in Spanish. Reading of literary texts, discussion, and brief essays.  
(Goodwyn.)

### SPANISH 12. REVIEW OF ORAL AND WRITTEN SPANISH. (3)

First and second semesters. Prerequisite: Spanish 7. A practical language course recommended for all students continuing in Spanish. May be taken concurrently with Spanish 11.  
(Norton, Staff.)

### *For Advanced Undergraduates*

### SPANISH 41-42. SPANISH PHONETICS. (1, 1)

First and second semesters. Prerequisite: Spanish 7 or equivalent. Descriptive study of the Spanish sound system. Practice in phonetic perception, transcription and articulation. Particular attention to sentence phonetics; juncture, rhythm, stress, pitch.  
(Mendeloff.)

### SPANISH 51-52. COMMERICAL SPANISH. (3, 3)

First and second semesters. Prerequisite: Spanish 12 and consent of instructor. Designed to give a knowledge of correct Spanish usage, commercial letters and business forms. Fundamental principles of Spanish shorthand will be included if warranted by the interest and ability of the class.  
(Rovner.)

### SPANISH 71-72. REVIEW GRAMMAR AND COMPOSITION. (3, 3)

First and second semesters. Prerequisite: Spanish 11 and 12 or equivalent. Intended to give an intensive and practical drill in Spanish composition.  
(Parsons, Rand.)

### SPANISH 75-76. SURVEY OF SPANISH LITERATURE. (3, 3)

First and second semesters. Prerequisite: Spanish 11 or equivalent. Basic survey of the history of Spanish literature.  
(Parsons, Rand.)

### SPANISH 77-78. SURVEY OF SPANISH-AMERICAN LITERATURE. (3, 3)

First and second semesters. Prerequisite: Spanish 11 or equivalent. Basic survey of the history of Spanish-American literature.  
(Nemes.)

### SPANISH 80-81. ADVANCED CONVERSATION. (3, 3)

First and second semesters. Prerequisite: Spanish 11 and 12 or consent of instructor. For students who wish to develop fluency and confidence in speaking the language.  
(Nemes.)

## FOREIGN LANGUAGES AND LITERATURES

### *For Advanced Undergraduates and Graduates*

#### SPANISH 101. APPLIED LINGUISTICS. (3)

Nature of Applied Linguistics and its contribution to the effective teaching of foreign languages. Comparative study of English and Spanish with emphasis upon points of divergence. Analysis, evaluation, and construction of related drills. (Mendeloff.)

#### SPANISH 103-104. ADVANCED COMPOSITION. (3, 3)

First and second semesters. Training in self-expression in Spanish, free composition, writing and speaking. (Goodwyn.)

#### SPANISH 107. INTRODUCTION TO MEDIEVAL LITERATURE. (3)

Spanish literary history from the eleventh through the fifteenth century. Selective readings from representative texts. (Mendeloff, Parsons.)

#### SPANISH 111. POETRY OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. (3)

Renaissance, mystics, and baroque poetry. (Goodwyn, Rand.)

#### SPANISH 112. PROSE OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. (3)

Selected readings in the pastoral, sentimental, picaresque novel and in the Romances of Chivalry. (Goodwyn.)

#### SPANISH 113. DRAMA OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. (3)

Selected plays of Lope de Vega, Calderon de la Barca, Tirso de Molina, and others. (Parsons, Rovner.)

#### SPANISH 114. LOPE DE VEGA. (3)

Selected works of Lope de Vega. (Parsons, Rovner.)

#### SPANISH 115-116. CERVANTES. (3, 3)

Drama, Exemplary Novels and Don Quixote. (Goodwyn, Rand.)

#### SPANISH 125. LITERATURE OF THE EIGHTEENTH CENTURY. (3)

Reform and neo-classicism: Feijoo and Luzan. (Goodwyn.)

#### SPANISH 131. NINETEENTH CENTURY FICTION. (3)

Reading of some of the significant novels of the nineteenth century. (Parsons, Rand.)

#### SPANISH 135. MODERN SPANISH POETRY. (3)

Significant poets of the nineteenth and twentieth centuries. (Nemes, Rand.)

#### SPANISH 136. MODERN SPANISH DRAMA. (3)

Significant plays of the nineteenth and twentieth centuries. (Parsons, Rand.)

#### SPANISH 141-142. LITERATURE OF THE TWENTIETH CENTURY. (3, 3)

First semester: Modern Spanish thought in the Generation of 1898 and after.  
Second semester: the contemporary Spanish novel. (Rand.)

## FOREIGN LANGUAGES AND LITERATURES

### SPANISH 161. SPANISH-AMERICAN FICTION. (3)

The novel and short story from the Wars of Independence to the present and their reflection of society in the Hispanic republics of the Western Hemisphere.  
(Nemes.)

### SPANISH 162. SPANISH-AMERICAN POETRY. (3)

Representative poetry after 1800 and its relation to European trends and writers.  
(Nemes.)

### SPANISH 163. SPANISH-AMERICAN ESSAY. (3)

Social and political thought from Bolivar to Vasconcelos and its relationship to social and political conditions in Spanish America.  
(Nemes.)

### SPANISH 171-172. SPANISH CIVILIZATION. (3, 3)

First and second semesters. A survey of two thousand years of Spanish history, outlining the cultural heritage of the Spanish people, their great men, traditions, customs, art and literature, with special emphasis on the interrelationship of social and literary history.  
(Rand.)

### SPANISH 173-174. LATIN-AMERICAN CIVILIZATION. (3, 3)

First and second semesters. Introductory survey of the cultures of Latin America; the historical-political background and the dominating concepts in the lives of the people.  
(Goodwyn, Nemes.)

### SPANISH 195-196-197. HONORS READING COURSE. (3, 3, 3)

Supervised reading to be taken only by students admitted to Honors Program.  
(Staff.)

### SPANISH 199. HONORS SEMINAR. (3)

Required of all students in the Honors Program. Other students will be admitted on special recommendation. Conducted in Spanish. Discussion of a central theme with related investigations by students.  
(Staff.)

### *For Graduates*

The requirements of students will determine which courses will be offered.

### SPANISH 201. THE HISTORY OF THE SPANISH LANGUAGE. (3)

(Mendeloff.)

### SPANISH 203. COMPARATIVE ROMANCE LINGUISTICS. (3)

(Mendeloff, Smith.)

### SPANISH 207. MEDIEVAL SPANISH LITERATURE. (3)

(Mendeloff, Parsons.)

### SPANISH 215-216. SEMINAR: THE GOLDEN AGE IN SPANISH LITERATURE. (3, 3)

(Goodwyn, Parsons, Rovner.)

### SPANISH 233. THE NOVEL OF THE NINETEENTH CENTURY. (3)

(Goodwyn, Parsons.)

## FOREIGN LANGUAGES AND LITERATURES

- SPANISH 234. THE DRAMA OF THE NINETEENTH CENTURY. (3)  
(Goodwyn, Parsons.)
- SPANISH 237-238. SEMINAR IN HISPANIC POETRY  
(NINETEENTH AND TWENTIETH CENTURIES). (3, 3)  
(Nemes, Rand, Goodwyn.)
- SPANISH 241-242. SPANISH PROSE OF THE TWENTIETH CENTURY. (3, 3)  
(Rand.)
- SPANISH 245. THE DRAMA OF THE TWENTIETH CENTURY. (3)  
(Rand.)
- SPANISH 263. COLONIAL SPANISH-AMERICAN LITERATURE. (3)  
(Nemes.)
- SPANISH 264. NATIONAL SPANISH-AMERICAN LITERATURE,  
SEMINAR. (3)  
(Nemes.)
- SPANISH 281-282. READING COURSE. (3, 3)  
(Staff.)
- SPANISH 291-292. SEMINAR. (3, 3)  
Topic to be determined. (Staff.)
- SPANISH 399. RESEARCH. (1-6)  
Credits determined by work accomplished. Guidance in the preparation of  
master's and doctoral thesis. Conference. (Staff.)

## RUSSIAN

- RUSSIAN 1-2. ELEMENTARY RUSSIAN. (3, 3)  
First and second semesters. Three recitations and one laboratory hour per week.  
Elements of grammar, pronunciation and conversation; exercises in translation.  
(Hitchcock, Staff.)
- RUSSIAN 6-7. INTERMEDIATE RUSSIAN. (3, 3)  
First and second semesters. Three recitations per week; additional electronic  
laboratory in Russian 6. Prerequisite: Russian 2 or equivalent. Reading of  
texts designed to give some knowledge of Russian life, thought and culture.  
(Hitchcock, Staff.)
- RUSSIAN 10. SCIENTIFIC RUSSIAN. (3)  
Prerequisite: Russian 7 or equivalent. Reading of technical and scientific prose.  
(Hitchcock.)
- RUSSIAN 12-13. CONVERSATION AND COMPOSITION. (3, 3)  
First and second semesters. Prerequisite, Russian 7 or equivalent. A practical  
language course recommended for all students continuing in Russian.  
(Hitchcock.)



## FOREIGN LANGUAGES AND LITERATURES

### RUSSIAN 71-72. REVIEW GRAMMAR AND COMPOSITION. (3, 3)

First and second semesters. Prerequisite: Russian 7 or equivalent. Designed to give a thorough training in the structure of the language; drill in Russian composition. (Hitchcock, Staff.)

### RUSSIAN 75-76. SURVEY OF RUSSIAN LITERATURE. (3, 3)

First and second semesters. Prerequisite: Russian 7 or equivalent. An elementary survey of Russian literature. (Hitchcock.)

### RUSSIAN 80-81. ADVANCED CONVERSATION. (3, 3)

First and second semesters. Prerequisite: Russian 12, 13, or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Hitchcock, Staff.)

### *For Advanced Undergraduates and Graduates*

### RUSSIAN 101-102. MODERN RUSSIAN LITERATURE. (3, 3)

First and second semesters. Works of Maxim Gorky, Alexei Tolstoy, P. Romanov, M. Zoshchenko, M. Sholokhov. (Hitchcock.)

### RUSSIAN 103-104. RUSSIAN LITERATURE OF THE NINETEENTH CENTURY. (3, 3)

First and second semesters. Selected writings of Pushkin, Gogol, Lermantov, Turgenev, Dostoevsky, Leo Tolstoy, Chekhov. (Hitchcock.)

## HEBREW

### HEBREW 1-2. ELEMENTARY HEBREW. (3, 3)

First and second semesters. Elements of grammar; pronunciation and conversation; exercises in translation. (Greenberg.)

### HEBREW 6-7. INTERMEDIATE HEBREW. (3, 3)

First and second semesters. Three recitations per week; additional electronic laboratory in Hebrew 6. Prerequisite, Hebrew 2 or equivalent. Texts designed to give some knowledge of Hebrew life, thought, and culture. (Greenberg.)

### HEBREW 12-13. CONVERSATION AND COMPOSITION. (3, 3)

First and second semesters. Prerequisite: Hebrew 7 or equivalent. A practical language course recommended for all students continuing with Hebrew. (Greenberg.)

### HEBREW 75-76. SURVEY OF HEBREW LITERATURE. (3, 3)

First and second semesters. Prerequisite: Hebrew 7 or equivalent. (Greenberg.)

### HEBREW 101. THE HEBREW BIBLE. (3)

Reading of selected portions of the Pentateuch. (Greenberg.)

### HEBREW 102. THE HEBREW BIBLE. (3)

Reading of selected portions of the Prophets. (Greenberg.)

### HEBREW 103. MODERN HEBREW LITERATURE. (3)

The period of the Haskalah (Enlightenment). (Greenberg.)

## GEOGRAPHY

### HEBREW 104. MODERN HEBREW LITERATURE. (3)

The period of the Tehiah (Modern Revival).

(Greenberg.)

## CHINESE

### CHINESE 1-2. ELEMENTARY CHINESE. (3, 3)

First and second semesters. Three recitations and one laboratory period per week. Elements of pronunciation, simple ideograms, colloquial conversation, translation. (Chen.)

### CHINESE 6-7. INTERMEDIATE CHINESE. (3, 3)

First and second semesters. Three recitations per week; additional electronic laboratory in Chinese 6. Prerequisite, Chinese 2 or equivalent. Reading of texts designed to give some knowledge of Chinese life, thought, and culture. (Chen.)

### CHINESE 101-102. READING FROM CHINESE HISTORY. (3, 3)

First and second semesters. Prerequisite, Chinese 7 or equivalent. Based on an anthology of historians from the Chou to the Ching dynasties. (Chen.)

### CHINESE 171-172. CHINESE CIVILIZATION. (3, 3)

First and second semesters. This course supplements Geog. 134 and 135, *Cultural Geography of East Asia*. It deals with Chinese literature, art, folklore, history, government, and great men. Second semester: developments in China since 1911. The course is given in English translation. (Chen.)

## ITALIAN

### ITALIAN 1-2. ELEMENTARY ITALIAN. (3, 3)

Three recitations and one laboratory hour per week. Elements of grammar and exercises in translation. (Carozza.)

### ITALIAN 6-7. INTERMEDIATE ITALIAN. (3, 3)

First and second semesters. Three recitations per week; additional electronic laboratory in Italian 6. Prerequisite, Italian 2 or equivalent. Reading of texts designed to give some knowledge of Italian life, thought, and culture. (Carozza.)

### ITALIAN 75-76. SURVEY OF ITALIAN LITERATURE. (3, 3)

First and second semesters. Prerequisite, Italian 7 or equivalent. Basic survey of history of Italian literature. (Carozza.)

## GEOGRAPHY

Students in the College of Arts and Sciences may select geography as a major field, and may also take courses in this Department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

## GEOLOGY

*Lecturer:* CURRIER

### GEOL. 1. GEOLOGY. (3)

A study dealing primarily with the principles of dynamical and structural geology. Designed to give a general survey of the rocks and minerals composing the earth; the movement within it; and its surface features and the agents that form them.

### GEOL. 2. HISTORICAL AND STRATIGRAPHIC GEOLOGY. (3)

A study of the earth's history as revealed through the principles of stratigraphy and the processes of physical geology, with emphasis on the formations and the geologic development of the North American continent. Prerequisite, Geology 1, or equivalent. (Dr. Currier.)

### GEOL. 119. SOIL MINERALOGY. (4)

Two lectures and two laboratory periods a week. Prerequisite, permission of instructor. A study of the fundamental laws and forms of crystal symmetry and essentials of crystal structure; structure, occurrence, association and use of minerals, determination of minerals by means of their morphological, chemical and physical properties. Particular attention is given to soil-forming minerals. Laboratory periods will be devoted to a systematic study of about 75 minerals.

## GOVERNMENT AND POLITICS

Students in the College of Arts and Sciences may select government and politics as a major field, and may also take courses in this Department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

## HISTORY

*Professor and Head:* LAND.

*Professors:* BAUER, CHATELAIN, GORDON, MERRILL, PRANGE AND WELLBORN.

*Associate Professors:* CONKIN, FERGUSON, JASHEMSKI, RIVLIN, SPARKS AND STROMBERG.

*Assistant Professors:* BRESLOW, CALLCOTT, CAMPBELL, CROSMAN, FARQUHAR, GATELL, GIFFIN, ROBERTSON, AND YANEY.

*Instructor:* VAN NESS.

### H. 5, 6. HISTORY OF AMERICAN CIVILIZATION. (3, 3)

Required of all students who entered the University after 1944-45. Normally to be taken in the sophomore year. An historical survey of the main forces in American life with emphasis upon the development of our democratic heritage. First semester from the colonial period through the Civil War. Second semester, since the Civil War. (American History Staff.)

## HISTORY

### H. 31, 32. LATIN AMERICAN HISTORY. (3, 3)

A survey of the history of Latin America from colonial origins to the present, covering political, cultural, economic, and social development, with special emphasis upon relations with the United States. First semester: Colonial Latin America. Second semester: the Republics. (Latin American History Staff.)

### H. 41, 42. WESTERN CIVILIZATION. (3, 3)

This course is designed to give the student an appreciation of the civilization in which he lives in its broadest setting. The study begins with the collapse of classical civilization and comes to the present. (European History Staff.)

### H. 51, 52. THE HUMANITIES. (3, 3)

Either of these courses may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. In surveying history from prehistoric times to the present, man's cultural development is emphasized. The course is a study of the achievements of the various civilizations which have contributed to the common cultural heritage of western civilization. It is designed as an introductory course in history which will make a more direct contribution to the other liberal art fields. First semester to the Renaissance. Second semester since the Renaissance. (Jashemski.)

### H. 53, 54. HISTORY OF ENGLAND AND GREAT BRITAIN. (3, 3)

A history of the development of British life and institutions. Open to all classes. Especially recommended for English majors and minors and pre-law students. First semester to 1485. Second semester, since 1485. (Gordon.)

### H. 56. AMERICAN LIFE AND THOUGHT. (3)

Required of all students who qualify by examination for exemption from H. 5, 6. Normally to be taken in sophomore year. A survey of significant historical trends and selected problems in the development of American civilization from the colonial era to recent times. Not to be used as a general elective course. (American History Staff.)

### H. 61, 62. FAR EASTERN CIVILIZATION. (3, 3)

This course seeks to give the student an understanding of a great civilization radically different from our own and an appreciation of the complex problems of the Far East and of American policy there. The approach is interdisciplinary within an historical framework. (Farquhar.)

### H. 71, 72. ISLAMIC CIVILIZATION. (3, 3)

This course seeks to give the student an insight into a cultural heritage that dominates the lives of over four hundred million people today. The study covers Islam in Spain, North Africa, Africa below the Sahara, India, and Indonesia as well as the Middle East. The approach is humanistic within an historical framework. (Rivlin.)

### *For Advanced Undergraduates and Graduates*

## AMERICAN HISTORY

### H. 101. AMERICAN COLONIAL HISTORY. (3)

Prerequisite, H. 5, 6, or the equivalent. The settlement and development of colonial America to the middle of the eighteenth century. (Land.)



## H. 102. THE AMERICAN REVOLUTION. (3)

Prerequisite, H. 5, 6, or the equivalent. The background and course of the American Revolution through the formation of the Constitution. (Ferguson.)

## H. 103. THE FORMATIVE PERIOD IN AMERICA, 1789-1824. (3)

The evolution of the Federal government, the origins of political parties, problems of foreign relations in an era of international conflict, beginnings of the industrial revolution in America, and the birth of sectionalism. (Ferguson.)

## H. 105. SOCIAL AND ECONOMIC HISTORY OF THE UNITED STATES TO 1865. (3)

Prerequisite, H. 5, 6, or the equivalent. A synthesis of American life from Independence through the Civil War. (Chatelain.)

## H. 106. SOCIAL AND ECONOMIC HISTORY OF THE UNITED STATES SINCE THE CIVIL WAR. (3)

Prerequisite, H. 5, 6 or the equivalent. The development of American life and institutions, with emphasis upon the period since 1876. (Chatelain.)

## H. 114. THE MIDDLE PERIOD OF AMERICAN HISTORY, 1824-1860. (3)

Prerequisite, H. 5, 6, or the equivalent. An examination of the political history of the U. S. from Jackson to Lincoln with particular emphasis on the factors producing Jacksonian democracy, Manifest Destiny, the Whig Party, the anti-slavery movement, the Republican Party, and secession. (Sparks.)

## H. 115. THE OLD SOUTH. (3)

Prerequisite, H. 5, 6, or the equivalent. A study of the institutional and cultural life of the ante-bellum South with particular reference to the background of the Civil War. (Callcott.)

## H. 116. THE CIVIL WAR. (3)

Prerequisite, H. 5, 6, or the equivalent. Military aspects; problems of the Confederacy; political, social, and economic effects of the war upon American society. A tour of one selected battlefield is a required part of the course. (Sparks.)

## H. 118, 119. RECENT AMERICAN HISTORY. (3, 3)

Prerequisite, H. 5, 6, or the equivalent. Party politics, domestic issues, foreign relations of the United States since 1890. First semester, through World War I. Second semester, since World War I. (Merrill.)

## H. 121. HISTORY OF THE AMERICAN FRONTIER. (3)

Prerequisite, H. 5, 6 or the equivalent. The Trans-Allegheny West. The westward movement into the Mississippi Valley. (Staff.)

## H. 124. RECONSTRUCTION AND THE NEW NATION, 1865-1896. (3)

Prerequisite, H. 5, 6, or the equivalent. Problems of construction in both South and North. Emergence of big business and industrial combinations. Problems of the farmer and laborer. (Merrill.)

## H. 127, 128. DIPLOMATIC HISTORY OF THE UNITED STATES. (3, 3)

Prerequisite, H. 5, 6, or the equivalent. A historical study of the diplomatic negotiations and foreign relations of the United States. First semester from the

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Revolution to the Civil War. Second semester, from the Civil War to the present. (Wellborn.)

### H. 129. THE UNITED STATES AND WORLD AFFAIRS. (3)

Prerequisite, H. 5, 6, or equivalent. A consideration of the changed position of the United States with reference to the rest of the world since 1917. (Wellborn.)

### H. 133, 134. THE HISTORY OF IDEAS IN AMERICA. (3, 3)

A history of basic beliefs about religion, man, nature, and society. Consent of the instructor is required for H. 134. (Conklin.)

### H. 135, 136. CONSTITUTIONAL HISTORY OF THE UNITED STATES. (3, 3)

Prerequisite, H. 5, 6, or the equivalent. A study of the historical forces resulting in the formation of the Constitution, and development of American constitutionalism in theory and practice thereafter. (Gatell.)

### H. 141, 142. HISTORY OF MARYLAND. (3, 3)

Prerequisite, H. 5, 6, or the equivalent. First semester, a survey of the political, social and economic history of colonial Maryland. Second semester, Maryland's historical development and role as a state in the American Union. (Chatelain.)

### H. 147. HISTORY OF MEXICO. (3)

The history of Mexico with special emphasis upon the independence period and upon relations between ourselves and the nearest of our Latin American neighbors. (Crosman.)

### H. 148. HISTORY OF CANADA. (3)

Prerequisites, H. 41, 42, or H. 53, 54. A history of Canada, with special emphasis on the nineteenth century and upon Canadian relations with Great Britain and the United States. (Gordon.)

## EUROPEAN HISTORY

### H. 151. HISTORY OF THE ANCIENT ORIENT AND GREECE. (3)

A survey of the ancient civilizations of Egypt, the Near East, and Greece, with particular attention to their institutions, life, and culture. (Jashemski.)

### H. 153. HISTORY OF ROME. (3)

A study of Roman civilization from the earliest beginnings through the Republic and down to the last centuries of the Empire. (Jashemski.)

### H. 155, 156. HISTORY OF MEDIEVAL EUROPE. (3, 3)

A study of medieval government, society, and thought from the collapse of classical civilization to the Renaissance. (Robertson.)

### H. 157. THE AGE OF ABSOLUTISM, 1648-1748. (3)

Europe in the Age of Louis XIV and the Enlightened Despots. (Staff.)

### H. 158. THE OLD REGIME AND THE FRENCH REVOLUTION, 1748-1815. (3)

Europe in the era of the French Revolution. (Staff.)

## H. 159, 160. HISTORY OF EUROPEAN IDEAS. (3, 3)

Prerequisites, H. 41, 42 or H. 53, 54, or the equivalent. Beginning with a review of the basic Western intellectual traditions as a heritage from the Ancient World, the course will present selected important currents of thought from the scientific revolution of the sixteenth and seventeenth century down to the twentieth century. First semester through the eighteenth century. Second semester, nineteenth and twentieth centuries. (Stromberg.)

## H. 161. THE RENAISSANCE AND REFORMATION. (3)

Prerequisite, H. 41, 42, or 53, or the permission of the instructor. The culture of the Renaissance, the Protestant revolt and Catholic reaction through the Thirty Years' War. (Breslow.)

## H. 163, 164. HISTORY OF THE BRITISH EMPIRE. (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54. First semester, the development of England's Mercantilist Empire and its fall in the war for American Independence (1783). Second semester, the rise of the Second British Empire and the solution of the problem of responsible self-government (1783-1867), the evolution of the British Empire into a Commonwealth of Nations, and the development and problems of the dependent Empire. (Gordon.)

## H. 165. CONSTITUTIONAL HISTORY OF GREAT BRITAIN. (3)

A survey of constitutional development in England with emphasis on the real property aspects of feudalism, the growth of the common law, the development of Parliament, and the expansion of liberties of the individual. (Gordon.)

## H. 167, 168. HISTORY OF RUSSIA. (3, 3)

A history of Russia from earliest times to 1917. (Yaney.)

## H. 169, 170. EUROPE IN THE NINETEENTH CENTURY, 1815-1919. (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54. A study of the political, economic, social and cultural development of Europe from the Congress of Vienna to the First World War. (Bauer.)

## H. 171, 172. EUROPE IN THE WORLD SETTING OF THE TWENTIETH CENTURY. (3, 3)

Prerequisites, H. 41, 42, or H. 53, 54. A study of political, economic, and cultural developments in twentieth century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance. (Prange.)

## H. 173. THE SOVIET UNION. (3)

A history of the Bolshevik Revolution and the founding of the Soviet Union: the economic policy and foreign policy of the U.S.S.R. to the present. (Yaney.)

## ASIAN HISTORY

## H. 181, 182. THE MIDDLE EAST. (3, 3)

Prerequisites, six hours from the following groups of courses: H. 41, 42; H. 51, 52; or H. 53, 54. A survey of the historical and institutional developments of the nations of this vital area. The Islamic Empires and their cultures; impact of the west; breakup of the Ottoman Empire and rise of nationalism; present day problems. (Rivlin.)

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### H. 183. THE CONTEMPORARY MIDDLE EAST. (3)

H. 181 or 182 recommended though not required. The development of middle eastern institutions in the nineteenth and twentieth centuries with reference to the emergence of contemporary states and their place in world affairs. (Rivlin.)

### H. 187, 188. HISTORY OF CHINA. (3, 3)

A history of China from earliest times to the present. The emphasis is on the development of Chinese institutions that have molded the life of the nation and its people. (Farquhar.)

### H. 189. HISTORY OF JAPAN. (3)

A history of Japan from earliest to modern times. Emphasis is placed on the evolution of institutions and thought. (Farquhar.)

### H. 195, 196. HONORS COLLOQUIUM (3, 3)

Enrollment limited to students admitted by the departmental Honors Committee. Reading in sources and secondary work centering about the development of the modern world. Discussions of reading and written work in weekly seminar meetings. (Staff.)

### H. 198. HONORS THESIS. (3)

Limited to students who have completed H. 195, 196. Normally repeated for a total of six hours credit during the senior year by candidates for honors in history. (Staff.)

### H. 199. PROSEMINAR IN HISTORICAL WRITING. (3)

First and second semesters. Discussions and research papers designed to acquaint the student with the methods and problems of research and presentation. The student will be encouraged to examine those phases of history which he regards as his specialties. (Staff.)

## *For Graduates*

### H. 200. HISTORIOGRAPHY: TECHNIQUES OF HISTORICAL RESEARCH AND WRITING. (3)

An introduction to the professional study of history, including an examination of the sources and nature of historical knowledge, historical criticism, and synthesis. Required of all candidates for advanced degrees in history. (Staff.)

### H. 201. SEMINAR IN AMERICAN HISTORY. (3)

(American History Staff.)

### H. 202. HISTORICAL LITERATURE: AMERICAN. (1-6)

Readings in the standard works and monographic studies to meet the requirements of qualified graduate students who need intensive concentration in American history. (American History Staff.)

### H. 203. SEMINAR IN THE HISTORY OF MARYLAND. (3)

(Land.)

### H. 205. SEMINAR IN AMERICAN ECONOMIC HISTORY. (3)

A seminar in the problems of American economic history of selected periods.

(Staff.)



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- H. 206. SEMINAR IN AMERICAN SOCIAL HISTORY. (3)  
A seminar in the problems of American social history of selected periods.  
(Staff.)
- H. 208. SEMINAR IN RECENT AMERICAN HISTORY. (3)  
Emphasis will be placed on the period since 1900. (Merrill.)
- H. 211. SEMINAR IN AMERICAN COLONIAL HISTORY. (3)  
A seminar on selected problems of early American history. (Land.)
- H. 212. SEMINAR IN THE AMERICAN REVOLUTION. (3)  
A seminar on problems of American history in the revolutionary era.  
(Ferguson.)
- H. 214. SEMINAR IN THE MIDDLE PERIOD OF AMERICAN HISTORY. (3)  
A seminar in the sources and problems of American political and military history from the Jackson Era to the election of Lincoln. (Sparks.)
- H. 215. SEMINAR IN THE OLD SOUTH. (3)  
A seminar on problems in the history of the ante-bellum South. (Callcott.)
- H. 216. SEMINAR IN THE AMERICAN CIVIL WAR. (3)  
A seminar in the sources and problems of the history of the American Civil War. Military and political problems are emphasized. (Sparks.)
- H. 217. SEMINAR IN RECONSTRUCTION AMERICA. (3)  
A seminar on problems resulting from the Civil War: political, social, and economic reconstruction. (Merrill.)
- H. 221. SEMINAR IN WESTERN HISTORY. (3)  
A seminar on American frontier history in the trans-Appalachian region and the Great Plains. (Pitt.)
- H. 233. SEMINAR IN EARLY AMERICAN INTELLECTUAL HISTORY. (3)  
A seminar on selected problems of American intellectual history before 1859.  
(Conkin.)
- H. 234. SEMINAR IN RECENT AMERICAN INTELLECTUAL HISTORY. (3)  
A seminar on problems of American intellectual history since 1859. (Conkin.)
- H. 245. TOPICS IN LATIN AMERICAN HISTORY. (3)  
Selected readings, research, and conferences on important topics in Latin American history. (Crosman.)
- H. 251. SEMINAR IN GREEK HISTORY. (3)  
A seminar in the sources and problems of Greek history. "Greek Federal Leagues" and "Political Institutions of the Greek City-States" are usually offered in alternate years. (Jashemski.)
- H. 253. SEMINAR IN ROMAN HISTORY. (3)  
A seminar in the sources and problems of Roman history. (1) "The Provinces of the Roman Empire," (2) "Roman Political Institutions," (3) "Roman Re-

## HISTORY

ligion," (4) "Municipal Life and Institutions (with emphasis on Pompeii)" are usually offered in successive years. (Jashemski.)

### H. 255. SEMINAR IN MEDIEVAL EUROPE. (3)

A seminar in the sources and major problems of western medieval history, with emphasis upon administrative and constitutional problems. (Robertson.)

### H. 259. SEMINAR IN EUROPEAN INTELLECTUAL HISTORY. (3)

A seminar in modern European intellectual history with emphasis on the eighteenth and nineteenth centuries. (Stromberg.)

### H. 260. HISTORICAL LITERATURE: EUROPEAN. (1-6)

Readings in the standard works and monographic studies to meet the requirements of qualified graduate students who need intensive concentration in European history. (European History Staff.)

### H. 265. SEMINAR IN MIDDLE EASTERN HISTORY. (3)

A seminar in selected problems of Middle Eastern history. (Rivlin.)

### H. 267. SEMINAR IN RUSSIAN HISTORY. (3)

A seminar in nineteenth and twentieth century Russian history with emphasis on economic and political problems. (Yaney.)

### H. 269. SEMINAR IN NINETEENTH CENTURY EUROPE. (3)

A seminar on problems in the history of western Europe during the nineteenth century. (Bauer.)

### H. 281. PROBLEMS IN THE HISTORY OF WORLD WAR I. (3)

Investigation of various aspects of the First World War, including military operations, diplomatic phases, and political and economic problems of the War and its aftermath. (Prange.)

### H. 282. PROBLEMS IN THE HISTORY OF WORLD WAR II. (3)

Investigation of various aspects of the Second World War, including military operations, diplomatic phases, and political and economic problems of the war and its aftermath. (Prange.)

### H. 285. SEMINAR IN THE HISTORY OF BRITAIN. (3)

A seminar in selected problems of the history of the United Kingdom. (Gordon.)

### H. 286. SEMINAR IN THE HISTORY OF THE BRITISH EMPIRE. (3)

A seminar on selected problems in the history of the British empire. (Gordon.)

### H. 289. SEMINAR IN CHINESE HISTORY. (3)

A seminar on selected problems in the history of China. (Farquhar.)

### H. 290. HISTORICAL LITERATURE: ASIAN. (1-6)

Readings in the standard works and monographic studies to meet the requirements of qualified graduate students who need intensive concentration in Asian history. (Asian History Staff.)

**H. 390. THE TEACHING OF HISTORY IN INSTITUTIONS OF HIGHER LEARNING. (1)**

Investigation and discussion of professional teaching of history at the college level: course construction, presentation of subject matter, testing, instrumental aids, evaluation of instruction. Required of all graduate assistants.

(Staff.)

**H. 399. THESIS RESEARCH. (1-6)**

(Staff.)

**MATHEMATICS**

*Professor and Head:* COHEN.

*Professors:* BRACE, DOUGLIS, GOLDBER, GOOD, HORVATH, HUMMEL, JACKSON, KURODA, J. LEHNER, MARTIN\*, MAYOR, RICHESON, STELL-MACHER.

*Visiting Professor:* KOETHE.

*Research Professors:* DIAZ\*, PAYNE\*, WEINSTEIN\*.

*Director of Computer Science Center:* RHEINBOLDT\*\*.

*Associate Professors:* AUSLANDER, CORREL, EHRLICH, GOLDBERG, KARP, G. LEHNER, PEARL, REINHART, SYSKI, ZEDEK.

*Visiting Associate Professor:* KOVARI.

*Research Associate Professor:* BRAMBLE\*.

*Assistant Professors:* FREEMAN, GARSTENS, KLEPPNER, MALTESE, MIKUL-SKI, NIETO, SEDGEWICK, SHEPHERD, SRINIVASACHARYULU, TULLEY, WILLKE.

*Research Assistant Professors:* BRAGG\*, GILBERT\*, HUBBARD\*, MET-CALF\*, TRYTTEN\*.

*Lecturers:* NESS†, SCHWEPPE.

*Instructors:* BARI, BERNHARDT, BROWN, CURRIER, DYER, HENNEY, HIE-BERT, KILBOURN, LEPSON, MAR, MCCLAY, VANDERSLICE (P.T.), ZEMEL.

The Mathematics Department Colloquium meets frequently throughout the academic year for reports on current research by the resident staff, visiting lecturers, and graduate students. In addition, the Institute for Fluid Dynamics and Applied Mathematics Colloquium meets at frequent

\*Member of the Institute for Fluid Dynamics and Applied Mathematics Under the College of Engineering.

†Member of the Computer Science Center.

## MATHEMATICS

intervals for research in those fields. All colloquium meetings are open to the public.

The local chapter of Pi Mu Epsilon, national honorary mathematics fraternity, meets regularly for the discussion of mathematical topics of interest to the undergraduate. The programs are open to the public.

The following courses are open to students who offer at least one unit of algebra for entrance: Math. 1 or 10.

The following courses are open to students who offer two or more units of algebra for entrance: Math. 18, 19.

Students are enrolled in Math. 10, 18, or 19, provided they pass the mathematics section of the general classification test given to incoming students during registration. Students who fail this test should enroll in Math. 1 if their curriculum calls for Math. 10 or 18, 19.

In general, students should enroll in only one of the course sequences, Math. 10-11-14-15, Math. 18-19-20-21. In case this rule is not followed, proper assignment of credit will be made upon application to the Department of Mathematics.

### INTRODUCTORY MATHEMATICS COURSES

#### MATH. 1. REVIEW OF HIGH SCHOOL ALGEBRA. (0)

Recommended for students who fail the qualifying examination for Math. 10 and 18. Special fee of \$45. (Note: this course will not be given after 1966).  
(Henney.)

#### MATH. 3. FUNDAMENTALS OF MATHEMATICS. (4)

This course, open to all students, is designed to provide an introduction to mathematical thinking and to develop an appreciation of the role of mathematics in human culture.  
(Correl.)

#### MATH. 10, 11. INTRODUCTION TO MATHEMATICS. (3, 3)

Prerequisite, 2½ years of college preparatory mathematics and satisfactory performance on the ACT mathematics test, or Math. 1. Open to students not majoring in mathematics or the physical or engineering sciences. Logic, sets, counting, probability; sequences, sums; elementary algebraic and transcendental functions and their geometric representation; systems of linear equations, vectors, matrices.  
(Good.)

#### MATH. 14, 15. ELEMENTARY CALCULUS. (3, 3)

Prerequisite, Math. 11 or equivalent. Open to students not majoring in mathematics or the physical or engineering sciences. Basic ideas of differential and integral calculus; elementary techniques and applications.  
(Correl.)

#### MATH. 18. INTRODUCTORY ANALYSIS. (3) (2 lectures, 2 drill periods per week)

Prerequisite, 2½ years of college preparatory mathematics and an appropriate score on the ACT mathematics test, or Math. 1. An introductory course for students not qualified to start Math. 19. Real numbers, functions, coordinate systems. Trigonometric functions. Plane analytic geometry.  
(Richeson.)



**MATH. 19. ELEMENTARY ANALYSIS. (4)** (3 lectures, 2 drill periods per week.)

Prerequisite,  $3\frac{1}{2}$  years of college preparatory mathematics and an appropriate score on the ACT mathematics test, or Math. 18. Vectors and analytic geometry in three dimensions. Linear transformations and applications to geometry. Review of real numbers, coordinate systems, trigonometric functions, determinants. (Hummel.)

**MATH 19H. ELEMENTARY ANALYSIS (HONORS). (5)**

See Math. 22 H. (Hummel.)

**MATH. 20. CALCULUS I. (4)** (3 lectures, 2 drill periods per week.)

Prerequisite, Math. 19 or equivalent. Functions, limits, continuity. Integration, differentiation and applications. Basic properties of the elementary functions. (Hummel.)

**MATH. 21. CALCULUS II. (4)** (3 lectures, 2 drill periods per week.)

Prerequisite, Math. 20 or equivalent. Methods of integration. Arc length, velocity, and acceleration. Tangents and normals to space curves. Improper integrals, sequences, and infinite series. (Hummel.)

**MATH. 21H. CALCULUS (HONORS). (5)**

See Math. 22 H.

**MATH. 22. CALCULUS III. (4)** (3 lectures, 2 drill periods per week.)

Prerequisite, Math. 21 or equivalent. Basic concepts of linear algebra, matrices, and determinants. Calculus of functions of vectors. Implicit function theorem. Surface integrals. Classical theorems of Green, Gauss, and Stokes. (Hummel.)

**MATH. 22H. CALCULUS (HONORS). (5)**

The three honors sections, Math. 19 H, 21 H, and 22 H are open to selected students upon approval by the mathematics department. A student who completes these three-semester courses will have a knowledge of the material covered in the regular sections of Math. 19, 20, 21 and 22. Senior staff members of the mathematics department will teach these sections. Students may transfer out of the honors sections at any time. A mathematics department adviser will help the student who has completed part of the honors course determine the proper regular course to enter. (Hummel.)

**MATH. 30. ELEMENTS OF MATHEMATICS. (4)**

Prerequisite, one year of college preparatory algebra. Required for majors in elementary education, and open only to students in this field. Topics from algebra and number theory, designed to provide insight into arithmetic: inductive proof, the natural number system based on the Peano axioms; mathematical systems, groups, fields; the system of integers; the system of rational numbers; congruence, divisibility; systems of numeration. (Garstens.)

**MATH. 31. ELEMENTS OF GEOMETRY. (4)**

Prerequisite, Math 30 or equivalent. Structure of mathematical systems, algebra of sets, geometrical structures, logic, measurement, congruence, similarity, graphs in the plane, geometry on the sphere. (Garstens.)

## MATHEMATICS

### MATH. 64. DIFFERENTIAL EQUATIONS FOR ENGINEERS. (3)

Prerequisite, Math. 21 or equivalent. Required of students in mechanical and electrical engineering. Differential equations of the first and second order with emphasis on their engineering applications. (Stellmacher.)

### MATH. 66. DIFFERENTIAL EQUATIONS FOR SCIENTISTS AND ENGINEERS (3)

Prerequisite, Math. 22 or equivalent. The field of directions and graphic solutions of first order differential equations. The simplest methods of numerical solution. Systems of differential equations. Introduction to Fourier series, and applications. (Stellmacher.)

## ALGEBRA AND NUMBER THEORY

### *For Graduates and Advanced Undergraduates*

### MATH. 100. VECTORS AND MATRICES. (3)

Prerequisite, Math 21 or Math. 15. Algebra of vector spaces and matrices. Recommended for students interested in the applications of mathematics. (Hummel.)

### MATH. 103. INTRODUCTION TO ABSTRACT ALGEBRA I. (3)

Prerequisite, Math. 22 or equivalent. Integers; groups, rings, integral domains, fields. (Ehrlich.)

### MATH. 104. INTRODUCTION TO ABSTRACT ALGEBRA II. (3)

Prerequisite, Math. 103 or consent of instructor. An abstract treatment of finite dimensional vector spaces. Linear transformations and their invariants. (Freeman.)

### MATH. 106. INTRODUCTION TO NUMBER THEORY. (3)

Prerequisite, Math. 22. Integers, divisibility, Euclid's algorithm, diophantine equations, prime numbers, congruences, reciprocity law of quadratic residues, quadratic fields, binary quadratic forms. (Kuroda.)

### *For Graduates*

### MATH. 200. ABSTRACT ALGEBRA I. (3)

Prerequisite, Math. 104 or equivalent. Elementary properties and examples of groups and rings, homomorphism theorems; integral domains, elementary factorization theory. Groups with operators; isomorphism theorems, normal series, Jordan-Holder Theorem, direct products, Krull-Schmidt Theorem. (Goldhaber.)

### MATH. 201. ABSTRACT ALGEBRA II. (3)

Prerequisite, Math. 200 or consent of instructor. Field theory, Galois theory. Commutative ideal theory. Multilinear algebra. (Goldhaber.)

### MATH. 202. LINEAR ALGEBRA. (3)

Prerequisite, Math. 201 or consent of instructor. Linear manifolds, the lattice sub-spaces, projectives, dualities, the ring of endomorphisms, the full linear group and its subgroups. (Pearl.)

**MATH. 203. GALOIS THEORY. (3)**

Prerequisite, Math. 201 or consent of instructor. Field extensions, automorphisms of a field, the Galois group of a polynomial equation, solvability by radicals, recent developments in Galois theory. (Kuroda.)

**MATH. 204, 205. TOPOLOGICAL GROUPS. (3, 3)**

Prerequisite, consent of instructor. An introductory course in abstract groups, topological spaces, and the study of collections of elements enjoying both these properties. The concept of a uniform space will be introduced and studied. The representation problem will be considered together with the subject of Lie groups. (Kleppner.)

**MATH. 206. NUMBER THEORY. (3)**

Prerequisite, consent of instructor. Foundations, linear and higher congruences, law of reciprocity, quadratic forms, sieve methods, elements of additive number theory and density, distribution of prime numbers and L-functions, discussion of unsolved problems. (Kuroda.)

**MATH. 208. RING THEORY. (3)**

Prerequisite, Math. 201 or consent of instructor. According to the needs of the class, emphasis will be placed on one or more of the following: ideal theory, structure theory of rings with or without minimum condition, division rings, algebras, non-associative rings. (Goldhaber.)

**MATH. 209. GROUP THEORY. (3)**

Prerequisite, Math. 201 or consent of instructor. According to the needs of the class, emphasis will be placed on one or more of the following aspects of discrete group theory: finite groups, abelian groups, free groups, solvable or nilpotent groups, groups with operators, groups with local properties, groups with clan conditions, extensions. (Pearl.)

**MATH. 271. SELECTED TOPICS IN ALGEBRA. (3)**

(Arranged) Prerequisite, consent of instructor. (Staff.)

**ANALYSIS**

*For Graduates and Advanced Undergraduates*

**MATH. 110. ADVANCED CALCULUS. (4)**

Prerequisite, Math. 22. A rigorous development of many topics from classical analysis such as the Stieltjes integral, surface integrals, sequences and series of functions, introduction to the Dirichlet integral. (A special section of Math. 110 for honors students will be provided.) (Tulley.)

**MATH. 111. ADVANCED CALCULUS. (4)**

Prerequisite, Math. 110 or equivalent. Calculus of functions of several variables. (Goldhaber.)

**MATH. 112. INFINITE PROCESSES. (3)**

Prerequisite, Math. 21 or equivalent. Construction of the real numbers from the rational numbers, sequences of numbers, series of positive and arbitrary numbers, infinite products, conditional and absolute convergence, sequences and

## MATHEMATICS

series of functions, uniform convergence, integration and differentiation of series, power series, and analytic functions. Fourier series, elements of the theory of divergent series, extension of the theory to complex numbers and functions. (Tulley.)

### MATH. 113. INTRODUCTION TO COMPLEX VARIABLES. (4)

Prerequisite, Math. 110. The algebra of complex numbers, analytic functions, mapping properties of the elementary functions. Cauchy's theorem and the Cauchy integral formula. Taylor and Laurent series. Residues. (Hummel.)

### MATH. 114. DIFFERENTIAL EQUATIONS (3)

Prerequisite, Math. 110. A general introduction to the theory of differential equations. Constructive methods of solution leading to existence theorems and uniqueness theorems. Other topics such as: systems of linear equations, the behavior of solutions in the large, the behavior of solutions near singularities, periodic solutions, stability, and Sturm-Liouville Problems. (Nieto.)

### MATH. 117. INTRODUCTION TO FOURIER ANALYSIS. (3)

Prerequisite, Math. 113. Fourier series, Fourier and Laplace transforms. (Nieto.)

### MATH. 118. INTRODUCTION TO REAL VARIABLES. (3)

Prerequisite, Math. 110. The Lebesgue integral. Fubini's theorem. Convergence theorems. The  $L_p$  spaces. (Kleppner.)

### MATH. 162. ANALYSIS FOR SCIENTISTS AND ENGINEERS I. (3)

Prerequisite, Math. 21 or consent of instructor. Not open to students with credit for Math. 22. Calculus of functions of several real variables; limits, continuity, partial differentiation, multiple integrals, line and surface integrals, vector-valued functions, theorems of Green, Gauss and Stokes. Physical applications. (This course cannot be counted toward a major in mathematics.) (Sedgewick.)

### MATH. 163. ANALYSIS FOR SCIENTISTS AND ENGINEERS II. (3)

Prerequisites, Math. 162 or 22 or consent of instructor. Not open to students with credit for Math. 116 or Math. 113. The complex field. Infinite processes for real and complex numbers. Calculus of complex functions. Analytic functions and analytic continuation. Theory of residues and application to evaluation of integrals. Conformal mapping. (This course cannot be counted toward a major in mathematics.) (Stellmacher.)

### MATH. 164. ANALYSIS FOR SCIENTISTS AND ENGINEERS III. (3)

Prerequisites, Math. 64 and Math. 163, or consent of instructor. Fourier and Laplace transforms. Evaluation of the complex inversion integral by the theory of residues. Applications to systems of ordinary and partial differential equations. (This course cannot be counted toward a major in mathematics.) (Sedgewick.)

### *For Graduates*

### MATH. 215, 216. ADVANCED DIFFERENTIAL EQUATIONS. (3, 3)

Prerequisites, Math. 100, 111 and 114, or consent of instructor. Existence and uniqueness theorems for systems of ordinary differential equations and for



partial differential equations, characteristic theory, reduction to normal forms, the method of finite differences. (Auslander.)

**MATH. 218. INTEGRAL EQUATIONS. (3)**

Prerequisites, Math. 100 and 287, or consent of instructor. Integral equations of the first and second kind, Volterra's equation, Abel's equation and fractional differentiation, the Fredholm theory, the Hilbert-Schmidt theory, Mercer's theorem, expansion in orthonormal series; existence theorems of potential theory and other applications. (Brace.)

**MATH. 253, 254. SPECTRAL THEORY IN HILBERT SPACE. (3, 3)**

Prerequisite, Math. 257 and Math. 287 or consent of instructor. An introduction to the theory of Hilbert Space and a detailed treatment of the spectral theory of self-adjoint operators in Hilbert Space, a presentation of the extension theory for symmetric operators, and applications to ordinary and partial differential operators. (Freeman.)

**MATH. 272. SELECTED TOPICS IN ANALYSIS. (3)**

(Arranged) Prerequisite, consent of instructor. (Staff.)

**MATH. 278. ADVANCED TOPICS IN COMPLEX ANALYSIS. (3)**

Prerequisite, Math. 288 or consent of instructor. Material selected to suit interests and background of the students. Typical topics: Conformal mapping, algebraic functions, Riemann surfaces, entire functions, Dirichlet series, Taylor's series, geometric function theory. (Hummel.)

**MATH. 280, 281. LINEAR SPACES. (3, 3)**

Prerequisite, Math. 287 or equivalent. Linear vector spaces and their topologies, linear operations and transformations and their inverses, Banach and Hilbert spaces. (Koethe.)

**MATH. 286, 287. THEORY OF FUNCTIONS. (3, 3)**

Prerequisite, Math. 111 or equivalent. Basic topics in real and complex variable theory, real and complex number systems, point sets on the line and in space, continuity, Riemann and Stieltjes integrals, Cauchy integral theorem, residues, power series, analytic functions, introduction to Lebesgue measures and integration. (Douglass.)

**MATH. 288. THEORY OF ANALYTIC FUNCTIONS. (3)**

Prerequisite, Math. 287 or a course in complex variables. Advanced topics in complex function theory, properties of power series, entire functions, conformal mapping, classification of singularities, harmonic functions. (Zedek.)

**MATH. 289. MEASURE AND INTEGRATION. (3)**

Prerequisite, Math 286 or a course in real variables. Set functions, abstract theory of measure, differentiability properties and absolute continuity of set functions, measurable functions, abstract integration theory, introduction to linear spaces. (Syski.)

## MATHEMATICS

### GEOMETRY AND TOPOLOGY

#### *For Advanced Undergraduates and Graduates*

#### MATH 120. INTRODUCTION TO GEOMETRY I. (3)

Prerequisite, Math. 22 or equivalent. Axiomatic development of plane geometries, Euclidean and non-Euclidean. Groups of isometries and similarities.

(Reinhart.)

#### MATH. 121. INTRODUCTION TO GEOMETRY II. (3)

Prerequisite, Math. 120. Non-Euclidean transformation groups, the Erlangen program, projective planes, cubics and quartics.

(Reinhart.)

#### MATH. 122. INTRODUCTION TO POINT SET TOPOLOGY. (3)

Prerequisite, Math 110 or 146, or equivalent. Connectedness, compactness, transformations, homeomorphisms; application of these concepts to various spaces, with particular attention to the Euclidean plane.

(Kleppner.)

#### MATH. 123. INTRODUCTION TO ALGEBRAIC TOPOLOGY. (3)

Prerequisite, Math. 122 and 103, or equivalent. Chains, cycles, homology groups for surfaces, the fundamental group.

(Lehner.)

#### MATH. 124. INTRODUCTION TO PROJECTIVE GEOMETRY. (3)

Prerequisite, Math. 22 or equivalent. Recommended for students in the College of Education. Elementary projective geometry, combining synthetic and algebraic approaches, projective transformations, harmonic division, cross ratio, projective coordinates, properties of conics.

(Reinhart.)

#### MATH. 126. INTRODUCTION TO DIFFERENTIAL GEOMETRY. (3)

Prerequisite, Math. 22 or equivalent. The differential geometry of curves and surfaces, curvature and torsion, moving frames, the fundamental differential forms, intrinsic geometry of a surface.

(Jackson.)

#### MATH. 128. EUCLIDEAN GEOMETRY. (3)

Prerequisite, Math. 22 or equivalent. Recommended for students in the College of Education. Axiomatic method, models, properties of axioms; proofs of some basic theorems from the axioms; modern geometry of the triangle, circle, and sphere.

(Mayor.)

#### *For Graduates*

#### MATH. 220. DIFFERENTIAL GEOMETRY OF CURVES AND SURFACES. (3)

Prerequisite, Math. 110 or equivalent. Classical theory of curves and surfaces, geometry in the large, the Gauss-Bonnet Theorem, surfaces of constant curvature.

(Reinhart.)

#### MATH. 221. DIFFERENTIABLE MANIFOLDS. (3)

Prerequisite, consent of instructor. Differentiable manifolds, embeddings in Euclidean space, vector and tensor bundles, vector fields, differentiable fields, Riemann matrices.

(Reinhart.)

#### MATH. 222. DIFFERENTIAL GEOMETRY. (3)

Prerequisite. Math. 220 or 221. Connections, curvature, torsion; symplectic, contact, and complex structures.

(Reinhart.)

**MATH. 223, 224. ALGEBRAIC TOPOLOGY. (3, 3)**

Prerequisites. Math. 100 and 123, or consent of instructor Homology, cohomology, and homotopy theory of complexes and spaces. (G. Lehnert.)

**MATH. 225, 226. SET THEORETIC TOPOLOGY. (3, 3)**

Prerequisite, concurrent enrollment in Math. 286, or equivalent. Foundations of mathematics based on a set of axioms, metric spaces, convergence and connectivity properties of point sets, continua, and continuous curves; the topology of the plane. (Correl.)

**MATH. 227, 228. ALGEBRAIC GEOMETRY. (3, 3)**

Prerequisite, consent of instructor, prime and primary ideals in Noetherian rings, Hilbert Nullstellensatz, places and valuations, fields of definition, Chow points, bi-rational correspondences, Abelian varieties, Picard varieties, algebraic groups. (Pearl)

**MATH. 229. DIFFERENTIAL TOPOLOGY. (3)**

Prerequisite, Math. 221. Characteristic classes, cobordism, differential structures on cells and spheres. (Srinivasacharyulu.)

**MATH. 273. SELECTED TOPICS IN GEOMETRY AND TOPOLOGY. (3)**

(Arranged) Prerequisite, consent of instructor. (Staff.)

**PROBABILITY AND STATISTICS**

*For Advanced Undergraduates and Graduates*

**MATH. 130. INTRODUCTION TO PROBABILITY THEORY I. (3)**

Prerequisite, Math. 22, or equivalent. Sample space, events, probability and its basic properties. Independence and conditioning, random variables, distribution functions (continuous and discrete); typical distributions, expectations, moments, generating functions; transformations of random variables, limit theorems. (Auslander.)

**MATH. 131. INTRODUCTION TO PROBABILITY THEORY II. (3)**

Prerequisite, Math. 130. Elementary stochastic processes. Renewal process, random walk, discrete Markov chains, birth processes, birth and death processes, stationary processes. (Auslander.)

**MATH. 132. INTRODUCTION TO STATISTICS. (3)**

(3 lectures and 1 hour of laboratory a week.)  
Prerequisite, Math. 130. Sampling distributions, elements of point and set estimation, maximum likelihood principle, testing statistical hypotheses, standard tests, Neyman-Pearson lemma and problems of optimality of tests, linear hypotheses, sequential methods. (Mikulski.)

**MATH. 133. APPLIED PROBABILITY AND STATISTICS I. (3)**

Prerequisite, Math. 15 or 21. Intended for students with major other than mathematics. Probability concepts in finite sample spaces, generalizations to continuous case (intuitive approach), random variables and distribution functions, standard distributions, expectations, moments and generating functions, limit theorems. (Mikulski.)

## MATHEMATICS

### MATH. 134. APPLIED PROBABILITY AND STATISTICS II. (3)

Prerequisite, Math. 133. Sampling distributions, estimation methods, standard procedures in testing statistical hypotheses, testing location and scale parameters, tests of independence and goodness of fit, elements of variance and regression analysis. (Mikulski.)

#### *For Graduates*

### MATH. 230, 231. PROBABILITY THEORY. (3, 3)

Prerequisites, Math. 111 and 130 or consent of instructor. Foundations of probability theory. Fields of events, probability space and probability measure. Random variables and convergence of random variables. Induced probability spaces. Expectations and moments. Distribution functions and their transforms. Consistency theorem. Laws of large numbers and central limit problem. Conditioning. Measurability and separability of stochastic processes. Stationary processes, harmonic analysis, Markov processes, Kolmogorov equations, diffusion theory. Martingales. (Syski.)

### MATH. 232. APPLIED STOCHASTIC PROCESSES. (3)

Prerequisites, Math. 111 and 130 or consent of instructor. Basic concepts of stochastic processes, stationary processes, Markov chains and processes (discrete and continuous parameter). Birth and death processes. Applications from theories of: queueing, storage, inventory, noise, epidemics and others. This course is recommended for graduates from Physics, Engineering, Biology and Social Sciences. (Syski.)

### MATH. 235, 236. TESTING STATISTICAL HYPOTHESES. (4, 4)

Prerequisites, Math. 130 and 132. (Recommended to be concurrent with Math. 230, 231). 3 hours lecture, 2 hours laboratory per week. Statistical decision problems. Uniformly most powerful tests. Exponential families of distributions, concepts of similarity and tests with Neyman-structure. Unbiased tests. Invariance and almost invariance. Elements of non-parametric inference. Linear hypotheses. Large sample methods. (Mikulski.)

### MATH. 275. SELECTED TOPICS IN PROBABILITY. (3)

(Arranged) Prerequisite, consent of instructor. (Staff.)

### MATH. 276. SELECTED TOPICS IN STATISTICS. (3)

(Arranged) Prerequisite, consent of instructor. (Staff.)

## FOUNDATIONS OF MATHEMATICS

#### *For Advanced Undergraduates and Graduates*

### MATH. 146. FUNDAMENTAL CONCEPTS OF MATHEMATICS. (3)

Prerequisite, Math. 22 or consent of instructor. Sets, relations, mappings. Construction of the real number system starting with Peano postulates; algebraic structures associated with the construction; Archimedean order, sequential completeness and equivalent properties of ordered fields. Finite and infinite sets, denumerable and non-denumerable sets. (Maltese.)



**MATH. 147. SET THEORY. (3)**

Prerequisite, Math. 22 or consent of instructor. Set Algebra, cardinal arithmetic, axiom of choice, Zorn's lemma, well-ordering principle, transfinite induction, ordinal arithmetic, continuum hypothesis. (Karp.)

**MATH. 148. INTRODUCTION TO MATHEMATICAL LOGIC. (3)**

Prerequisite, Math. 146 or 147 or 103. Propositional calculus, predicate logic, axiomatic set theory, paradoxes. (Not open to students with credit for Math. 144). (Karp.)

*For Graduates*

**MATH. 244. MATHEMATICAL LOGIC. (3)**

Prerequisite, Math. 148. Completeness of first-order predicate logic and applications, recursive functions, Godel's incompleteness theorem. (Kuroda.)

**MATH. 277. SELECTED TOPICS IN MATHEMATICAL LOGIC. (3)**

(Arranged) Prerequisite, consent of instructor. (Staff.)

**MATHEMATICAL METHODS**

*For Advanced Undergraduates and Graduates*

**MATH. 158. GAMES AND LINEAR RELATIONS. (3)**

Prerequisite, Math. 22; Math 100 recommended. Theory of games, minimax theorem, theory of linear programming, simplex method, systems of linear inequalities and the nature of their solutions, geometrical interpretations. (Pearl.)

**MATH. 212. SPECIAL FUNCTIONS. (3)**

Prerequisite, Math. 287 or consent of instructor. Gamma-function, Riemann zeta-function, hypergeometric functions, confluent hypergeometric functions and Bessel functions. (Stellmacher.)

**MATH. 252. VARIATIONAL METHODS. (3)**

Prerequisites, Math. 257 and Math. 258. The Euler-Lagrange equation, minimal principles in mathematical physics, estimation of capacity, torsional rigidity and other physical quantities; symmetrization, isoperimetric inequalities, estimation of eigenvalues, the minimax principle. (Payne.)

**MATH. 257. OPERATORS ON NORMED SPACES. (3)**

Prerequisite, Math. 111. An introduction to linear analysis, in particular to those concepts and methods important in modern applied mathematics. Among the topics to be covered are linear spaces, norms and inner products, linear operators, eigenvalues, basic inequalities. (Freeman.)

**MATH. 258. INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS. (3)**

Prerequisite, Math. 111. General introduction to the field of partial differential equations. Among the topics to be discussed are typical boundary and initial value problems of mathematical physics and an indication of the main methods of solution, relations to difference equations and integral equations. (Stellmacher.)

## MATHEMATICS

### MATH. 259. INTRODUCTION TO CONTINUUM MECHANICS. (3)

Prerequisites, Math. 100 and Math. 258 or consent of instructor. Solid and fluid continua, general analysis of stress and strain, equilibrium of elastic bodies, equation of motion for fluid bodies, stress-strain relations, equations of perfect fluids and formulation of viscous flow problems. (Bragg.)

### MATH. 260. FOUNDATIONS OF MATHEMATICAL PHYSICS. (3)

Prerequisites, Math. 110 and Math. 111 or consent of instructor. Introduction to the theory of distributions and Fourier analysis. Application to partial differential equations. (Stallmacher.)

### MATH. 261, 262. FLUID DYNAMICS. (3, 3)

Prerequisite, Math. 259 or consent of instructor. A mathematical formulation and treatment of problems arising in the theory of incompressible, compressible and viscous fluids. (Payne.)

### MATH. 263. LINEAR ELASTICITY. (3)

Prerequisite, Math. 259. Linear elastic behavior of solid continuous media. Topics covered include: torsion and flexure of beams, plane strain and plane stress, vibration and buckling problems, variational principles. Emphasis is placed on formulation and technique rather than on specific examples. (Payne.)

### MATH. 264. NON-LINEAR ELASTICITY. (3)

Prerequisite, Math. 259. Fundamentals of non-linear elasticity, finite deformations, rubber elasticity, small deformations superimposed on finite deformations. (Payne.)

### MATH. 265. HYPERBOLIC DIFFERENTIAL EQUATIONS. (3)

Prerequisite, Math. 258. Two variables, Cauchy's problem, characteristics, Riemann's method, properties of the Riemann function, quasi-linear equations and canonical hyperbolic systems, wave equation in  $n$ -dimensions, method of Hadamard and Riesz, Euler-Poisson equation and the singular problems, Huyghen's principle. (Nieto.)

### MATH. 266. ELLIPTIC DIFFERENTIAL EQUATIONS. (3)

Prerequisite, Math. 258. The equations of Laplace and Poisson, flux, the theorems of Gauss and Green, potentials of volume and surface distributions, harmonic functions, Green's function and the problems of Dirichlet and Neumann; linear elliptic equations with variable coefficients, in particular the equations of Stokes and Beltrami; fundamental solutions, the principle of the maximum, and boundary value problems; introduction to the theory of non-linear equations. (Nieto.)

### MATH. 274. SELECTED TOPICS IN APPLIED MATHEMATICS. (3)

(Arranged) Prerequisite, consent of instructor. (Staff.)

## NUMERICAL MATHEMATICS

### *For Advanced Undergraduates and Graduates*

### MATH. 156. PROGRAMMING FOR HIGH SPEED COMPUTERS. (3)

Prerequisite, Math 22 or equivalent. General characteristics of high-speed automatic computers; logic of programming, preparation of flow charts, preliminary

and final coding; scaling, use of flow point routines; construction and use of subroutines; use of machine for mathematical operations and for automatic coding. (Each student will prepare and, if possible, run a problem on a high-speed computer.) (Rheinboldt.)

## MATH. 170. INTRODUCTION TO NUMERICAL ANALYSIS. (4)

(3 lectures and 2 laboratory periods per week.)

Prerequisites, Math. 21 or Math. 15. Introduction to numerical methods, errors, interpolations, differences, numerical differentiation and integration, iterative solution of equations, least squares, elements of numerical approximation.

(Rheinboldt.)

## MATH. 171. NUMERICAL METHODS IN LINEAR ALGEBRA. (4)

(3 lectures and 2 laboratory periods per week.)

Prerequisite, Math. 100 or 104, Math. 110, Math. 170. Numerical solution of linear equations, direction methods, iterative methods, eigenvalue problems and their numerical solution, errors connected with numerical work in linear algebra.

(Rheinboldt.)

## MATH. 172. NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS. (4)

(3 lectures and 2 laboratory periods per week.) Prerequisite, Math. 22 or 162 and Math. 171. The methods of Euler, Runge, Kutta, and other single-step methods, multistep methods, discretization errors, stability problems.

(Rheinboldt.)

## MATH. 173. NUMERICAL METHODS FOR SCIENTISTS AND ENGINEERS. (4)

(3 lectures and 2 laboratory periods per week.) Prerequisite, Math. 22 or 162 and Math. 64. Interpolation, numerical differentiation and integration, numerical solution of polynomial and transcendental equations, least squares, systems of linear equations, numerical solution of ordinary differential equations, errors in numerical calculations.

(Rheinboldt.)

### *For Graduates*

## MATH. 255, 256. ADVANCED NUMERICAL METHODS IN DIFFERENTIAL EQUATIONS. (3, 3)

Prerequisites, Math. 257 and Math. 258. Approximation methods for boundary value, initial value and eigenvalue problems in both ordinary and partial differential equations, including finite differences and methods involving approximating functions.

(Rheinboldt.)

## MATH. 267, 268. MODERN NUMERICAL MATHEMATICS. (3, 3)

Prerequisites, Math. 170 and Math. 257. Review of classical numerical analysis, matrix computations in particular numerical evaluation of eigenvalues, iterative techniques from a viewpoint of linear analysis; introduction to numerical approximations; error analysis in numerical computation. The course will involve laboratory work in the Computer Science Center.

(Rheinboldt.)

## MATH. 269. ADVANCED MATHEMATICAL PROGRAMMING. (3)

Prerequisites, Math. 158 and Math. 257. Linear inequalities and related systems and their applications to linear programming, convex functions and generalized programming problems, topics in non-linear and dynamic programming.

(Rheinboldt.)

## MATHEMATICS

### COURSES FOR TEACHERS OF MATHEMATICS AND SCIENCE

#### MATH. 181. INTRODUCTION TO NUMBER THEORY. (3)

Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. Axiomatic developments of the real numbers. Elementary number theory.

#### MATH 182. INTRODUCTION TO ALGEBRA. (3)

Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. Modern ideas in algebra and topics in the theory of equations.

#### MATH. 183. INTRODUCTION TO GEOMETRY. (3)

Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. A study of the axioms for Euclidean and non-Euclidean geometry.

#### MATH. 184. INTRODUCTION TO ANALYSIS. (3)

Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. A study of the limit concept and the calculus. (Previous knowledge of calculus is not required.)

#### MATH. 185. SELECTED TOPICS FOR TEACHERS OF MATHEMATICS. (1-3)

Prerequisite, one year of college mathematics or consent of instructor.

#### MATH. 189. NATIONAL SCIENCE FOUNDATION SUMMER INSTITUTE FOR TEACHERS OF SCIENCE AND MATHEMATICS. SEMINAR. (1-3)

Lectures and discussions to deepen the student's appreciation of mathematics as a logical discipline and as a medium of expression. Special emphasis on topics relevant to current mathematical curriculum studies and revisions.

### SEMINARS, SELECTED TOPICS, RESEARCH

*For Advanced Undergraduates and Graduates*

#### MATH. 190. HONORS SEMINAR. (2)

Prerequisite, permission of the departmental Honors Committee. Reports by students on mathematical literature; solution of various problems. (Ehrlich.)

#### MATH. 191. SELECTED TOPICS IN MATHEMATICS (Credit according to work done)

Prerequisite, permission of the instructor. Topics of special interest to advanced undergraduate students will be offered occasionally under the general



## MICROBIOLOGY

guidance of the departmental Committee on Undergraduate Studies. Honors students register for reading courses under this number. (Staff.)

### *For Graduates*

#### MATH. 298. PROSEMINAR IN RESEARCH. (1)

Prerequisite, one semester of graduate work in mathematics. A seminar devoted to the foundations of mathematics, including mathematical logic, axiom systems, and set theory. (Auslander.)

#### MATH. 399. RESEARCH.

(Arranged)

(Staff.)

## MICROBIOLOGY

*Professor and Head:* FABER.

*Professors:* HANSEN, PELCZAR AND DOETSCH.

*Associate Professor:* LAFFER.

*Assistant Professor:* HETRICK.

*Lecturer:* STADTMAN.

#### MICROB. 1. GENERAL MICROBIOLOGY. (4)

First and second semesters. Summer session. Two lectures and two two-hour laboratory periods a week. Laboratory fee, \$15.00. The physiology, culture and differentiation of microorganisms. Fundamental principles of microbiology in relation to man and his environment. (Pelczar.)

#### MICROB. 51. CYTOLOGY OF BACTERIA. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Microb. 1, microbiology major or consent of instructor. Limited to undergraduate students. Laboratory fee, \$15.00. A consideration of morphology, differentiation, and cytochemistry of the eubacterial organism. (Doetsch.)

#### MICROB. 60. MICROBIOLOGICAL LITERATURE. (1)

Second semester. One lecture period a week. Prerequisite, a major in microbiology. Introduction to periodical literature, methods, interpretation and presentation of reports. (Doetsch.)

### *For Advanced Undergraduates and Graduates*

#### MICROB. 101. PATHOGENIC MICROBIOLOGY. (4)

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 1. Laboratory fee, \$15.00. The role of microorganisms in the

## MICROBIOLOGY

diseases of man and animals with emphasis upon the differentiation and culture of microorganisms, types of disease, modes of disease transmission, prophylactic, therapeutic and epidemiological aspects. (Faber.)

### MICROB. 103. SEROLOGY. (4)

Second semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 101. Laboratory fee, \$15.00. Infection and resistance; principles and types of immunity; hypersensitiveness. Fundamental techniques of major diagnostic immunological reactions and their application. (Faber.)

### MICROB. 104. HISTORY OF MICROBIOLOGY. (1)

First semester. One lecture period a week. Prerequisite, a major or minor in microbiology. History and integration of the fundamental discoveries of the science. The modern aspects of cytology, taxonomy, fermentation, and immunity in relation to early theories. (Doetsch.)

### MICROB. 111. GENERAL VIROLOGY. (3)

First semester. Two lectures and one three-hour laboratory period a week. Prerequisite, Microb. 101 or equivalent. Laboratory fee, \$15.00. Basic concepts regarding the nature of viruses and their properties, together with techniques for their characterization and identification. (Hetrick.)

### MICROB. 108. EPIDEMIOLOGY AND PUBLIC HEALTH. (2)

Second semester. Two lecture periods a week. Prerequisite, Microb. 1. History, characteristic features, and epidemiology of the important communicable diseases, public health administration and responsibilities; vital statistics. (Faber.)

### MICROB. 121. ADVANCED METHODS. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, consent of instructor. Laboratory fee, \$15.00. The application of quantitative techniques for measurement of enzyme reactions, mutations, fermentation, analyses, and other physiological processes of microorganisms. (Hansen, Pelczar.)

### MICROB. 131, 133. APPLIED MICROBIOLOGY. (4, 4)

First and second semesters. Two lectures and two two-hour laboratory periods a week. Prerequisite, Microb. 1. Laboratory fee, \$15.00. The application of microorganisms and microbiological principles to milk, dairy products, and foods; industrial processes; soil; water sanitation operation.

(Doetsch, Hansen, Laffer, MacQuillan.)

### MICROB. 150. MICROBIAL PHYSIOLOGY. (2)

First semester. Two lecture periods a week. Prerequisite, 8 credits in microbiology. Aspects of the growth, death, and energy transactions of microorganisms are considered, as well as the effects of the physical and chemical environment on them. (Doetsch.)

### MICROB. 160. SYSTEMATIC BACTERIOLOGY. (2)

First semester. Two lecture periods a week. Prerequisite, 8 credits in microbiology. History of bacterial classification; genetic relationships; international codes of nomenclature; bacterial variation as it affects classification. (Hansen.)

**MICROB. 181. MICROBIOLOGICAL PROBLEMS. (3)**

First and second semesters. Summer session. Prerequisite, 16 credits in microbiology. Registration only upon the consent of the instructor. Laboratory fee, \$15.00. This course is arranged to provide qualified majors in microbiology and majors in allied fields an opportunity to pursue specific microbiological problems under the supervision of a member of the Department. (Faber.)

*For Graduates*

**MICROB. 201. MEDICAL MYCOLOGY. (4)**

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, 30 credits in microbiology and allied fields. Laboratory fee, \$15.00. Primarily a study of the fungi associated with disease and practice in the methods of isolation and identification. (Laffer.)

**MICROB. 202. GENETICS OF MICROORGANISMS. (2)**

Second semester. Two lecture periods a week. Prerequisite, consent of instructor. An introduction to genetic principles and methodology applicable to microorganisms. Spontaneous and induced mutation, interaction between clones. (Hansen.)

**MICROB. 204. BACTERIAL METABOLISM. (2)**

First semester. Two lecture periods a week. Prerequisite, 30 credits in microbiology and allied fields, including Chem. 161 and 162. Bacterial nutrition, enzyme formation, metabolic pathways and the dissimilation of carbon and nitrogen substrates. (MacQuillan.)

**MICROB. 206, 208. SPECIAL TOPICS. (1-4, 1-4)**

First and second semesters. Prerequisite, 20 credits in microbiology. Presentation and discussion of fundamental problems and special subjects in the field of microbiology. (Staff.)

**MICROB. 210. VIROLOGY AND TISSUE CULTURE. (2)**

Second semester. Two lecture periods a week. Prerequisite, Microb. 101 or equivalent. Characteristics and general properties of viruses and rickettsiae. Principles of tissue culture. (Hetrick.)

**MICROB. 211. VIROLOGY AND TISSUE CULTURE LABORATORY. (2)**

Second semester. Two three-hour laboratory periods a week. Prerequisite, Microb. 101 or equivalent. Registration only upon consent of instructor. Laboratory fee, \$20.00. Laboratory methods in virology and tissue culture. (Hetrick.)

**MICROB. 214. ADVANCED BACTERIAL METABOLISM. (1)**

Second semester. One lecture period a week. Prerequisite, Microb. 204 and consent of instructor. A discussion of recent advances in the field of bacterial metabolism with emphasis on metabolic pathways of microorganisms. (Pelczar.)

**MICROB. 280. SEMINAR-RESEARCH METHODS. (1)**

First semester. Discussions and reports prepared by majors in microbiology engaged in current research; presentation of selected subjects dealing with recent advances in microbiology. (Staff.)

## MUSIC

### MICROB. 282. SEMINAR-MICROBIOLOGICAL LITERATURE. (1)

Second semester. Presentation and discussion of current literature in microbiology. (Staff.)

### MICROB. 399. RESEARCH.

First and second semesters. Summer session. Credits according to work done. Laboratory fee, \$15.00. The investigation is outlined in consultation with and pursued under the supervision of a senior staff member of the Department. (Staff.)

## MUSIC

*Professor and Head:* ULRICH.

*Professors:* GRENTZER AND TRIMBLE.

*Associate Professors:* HENDERSON AND SPRINGMANN.

*Assistant Professors:* BERMAN, BERNSTEIN, DE VERMOND, EISENSTADT, GORDON, HEIM, MEYER, NOSSAMAN, PENNINGTON, AND TRAVER.

*Instructors:* FANOS, HALEY, HEAD, MORRISON, OSTLING, AND PAYERLE.

### MUSIC 1. INTRODUCTION TO MUSIC. (3)

Second semester. Open only to music or music education majors; other students take Music 20. Music 1 and 20 may not both be counted for credit. Three lectures per week. A study of the forms and styles of music, leading to an intelligent appreciation of the art and providing a foundation for more advanced courses in the Department of Music. (Ulrich.)

### MUSIC 4. MEN'S GLEE CLUB. (1)

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Traver.)

### MUSIC 5. WOMEN'S CHORUS. (1)

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Traver.)

### MUSIC 6. ORCHESTRA. (1)

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Head.)

### MUSIC 7, 8. THEORY OF MUSIC. (3, 3)

First and second semesters. Two lectures and three laboratory hours per week. A fundamental course in the elements of music. Study of rhythms, scales,



chord structures, and tonalities through ear training, sight singing, and keyboard drill. The student must achieve a grade of "C" in Music 8 in order to register for Music 70. (Payerle.)

**MUSIC 9. CHAMBER MUSIC ENSEMBLE. (1)**

First and second semesters. This course does not fulfill the ensemble requirements of the various curricula. Three laboratory hours per week. Rehearsal and performance of selected works for small ensembles of strings, winds, and piano or small vocal ensembles. May be repeated for credit; the music studied will cover a cycle of about six semesters. (Staff.)

**MUSIC 10. BAND. (1)**

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Henderson, Ostling.)

**MUSIC 15. CHAPEL CHOIR. (1)**

First and second semesters. Open to all students in the University, subject to the Director's approval. The Choir will appear at services held in the Memorial Chapel. May be taken until a total of six semester hours of credit has been earned. (Springmann.)

**MUSIC 16. FUNDAMENTALS FOR THE CLASSROOM TEACHER. (3)**

First and second semesters. Open to students majoring in elementary education or childhood education; other students take Music 7. Music 7 and 16 may not both be counted for credit. The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning. (Fanos.)

**MUSIC 20. SURVEY OF MUSIC LITERATURE. (3)**

First and second semesters. Three lectures per week. Open to all students except music and music education majors, and may be taken by students who qualify to select courses within Group II of the American Civilization Program. Music 1 and 20 may not both be taken for credit. A study of the principles upon which music is based, and an introduction to the musical repertoires performed in America today. (Gordon.)

**MUSIC 21, 22. CLASS VOICE. (2, 2)**

First and second semesters. Four hours per week. A laboratory course in which a variety of voices and vocal problems are represented. Principles of correct breathing as applied to singing; fundamentals of tone production and diction. Students are taught to develop their own voices. Repertoire of folk songs and songs of the Classical and Romantic periods. (Nossaman.)

**MUSIC 23, 24. CLASS PIANO. (2, 2)**

First and second semesters. Four hours per week. Functional piano training for beginners. Development of techniques useful for school and community playing. Basic piano techniques; chord, arpeggio, and scale techniques; melody and song playing; simple accompaniments, improvisation for accompaniments and rhythms; sight reading and transposition, and playing by ear. Music 24, continuation of Music 23; elementary repertoire is begun. (de Vermond.)

## MUSIC

### MUSIC 31, 32. ADVANCED CLASS VOICE. (2, 2)

First and second semesters. Four hours per week. Prerequisite, Music 22 or equivalent vocal training. Continuation of Music 22, with more advanced repertoire for solo voice and small ensembles. A special section for music-education majors will include the study of methods and materials for teaching class voice. (Pennington.)

### MUSIC 33, 34. ADVANCED CLASS PIANO. (2, 2)

First and second semesters. Prerequisite, Music 24 or equivalent piano training. Four hours per week. Advanced keyboard techniques. Continuation of skills introduced in Music 24; transposition, modulation, and sight reading; methods of teaching functional piano. Music 34, development of style in playing accompaniments and in playing for community singing. More advanced repertoire. (de Vermond.)

### MUSIC 70, 71. ADVANCED THEORY OF MUSIC. (4, 4)

First and second semesters. Prerequisite, Music 8 with a grade of at least "C". Three lectures and two laboratory hours per week. An integrated course of written harmony, keyboard harmony, and ear training. Continuation of the principles studied in Music 8. Harmonic progressions; Music 70, eighteenth century chorale style; Music 71, nineteenth century styles including chromatic and modulatory techniques. Realization of figured basses, and composition in the smaller forms. Advanced study of solfege, with drill in melodic, rhythmic, and harmonic dictation. Application of harmonic principles to the keyboard. (Haley.)

### MUSIC 80, 82. CLASS STUDY OF STRING INSTRUMENTS. (2, 2)

First and second semesters. Four laboratory hours per week. Fundamental bowings, technical problems, vibrato, and a study of ensemble materials. Music 80, violin and viola; Music 82, cello and bass, and a continuation of violin. (Berman.)

### MUSIC 81, 83. CLASS STUDY OF WIND INSTRUMENTS. (2, 2)

First and second semesters. Four laboratory hours per week. A study of wind and percussion instruments, with emphasis on ensemble training. The student will acquire an adequate playing technique on one instrument in both woodwind and brass categories, and must gain an understanding of the acoustic principles and construction of all wind and percussion instruments. (Henderson, Ostling.)

### MUSIC 120, 121. HISTORY OF MUSIC. (3,3)

First and second semesters. Prerequisites, Music 1 or 20 and junior standing. A study of musical styles from their origins in western Europe to their present-day manifestations. The interaction of music and other cultural activities. Music 120, the Greek period to Bach; Music 121, Bach to the present. (Jordan, Bernstein.)

### MUSIC 125. HONORS READING COURSE. (2-3)

First and second semesters. Prerequisites: Junior standing and consent of Honors Committee. Selected readings in the history, literature, and theory of music. The course may be repeated for credit at the discretion of the Committee. (Staff.)

**MUSIC 130, 131. MUSIC LITERATURE SURVEY FOR THE NON-MAJOR. (3, 3)**

Either semester may be taken separately. Prerequisite, Music 20 or the equivalent. Open to all students except music and music-education majors. Selected compositions are studied from the standpoint of the informed listener. Music 130, choral music, opera, and art song; Music 131, orchestral, chamber, and keyboard music. (Staff.)

**MUSIC 141, 142. MUSICAL FORM. (2, 2)**

First and second semesters. Prerequisite, Music 70, 71. A study of the organizing principles of musical composition, their interaction in musical forms, and their functions in different styles. Music 141, the phrase to the rondo; Music 142, the larger forms. (Staff.)

**MUSIC 143, 144. COMPOSITION. (2, 2)**

First and second semesters. Prerequisite, Music 70, 71. Principles of musical composition, and their application to the smaller forms. Original writing in nineteenth and twentieth century musical idioms for various media. (Trimble.)

**MUSIC 145, 146. COUNTERPOINT. (2, 2)**

First and second semesters. Prerequisite, Music 70, 71. A course in eighteenth century contrapuntal techniques. Study of devices of imitation in the invention and the choral prelude. Original writing in the smaller contrapuntal forms. (Trimble.)

**MUSIC 147, 148. ORCHESTRATION. (2, 2)**

First and second semesters. Prerequisite, Music 70, 71. A study of the ranges, musical functions, and technical characteristics of the instruments, and their color possibilities in various combinations. Practical experience in orchestrating for small and large ensembles. (Trimble.)

**MUSIC 150. KEYBOARD HARMONY. (2)**

First semester. One lecture and two laboratory hours per week. Prerequisite, Music 70, 71. The application to the piano keyboard of the harmonic principles acquired in Music 70, 71. Harmonization of melodies, improvisation and accompanying, playing from dictation, and transposition. (Haley.)

**MUSIC 160, 161. CONDUCTING. (2, 2)**

First and second semesters. Music 160 or equivalent is prerequisite to Music 161. A laboratory course in conducting vocal and instrumental groups. Baton technique, score reading, rehearsal techniques, tone production, style, and interpretation. Music of all periods will be introduced. (Traver.)

**MUSIC 164. SOLO VOCAL LITERATURE. (3)**

Second semester. Prerequisite, Music 120, 121, or the equivalent. The study of solo vocal literature from the Baroque cantata to the art song of the present. The *Lied*, *melodie*, vocal chamber music, and the orchestral song are examined. (Pennington.)

**MUSIC 165. KEYBOARD MUSIC. (3)**

First semester. Prerequisite, Music 120, 121, or the equivalent. The history and literature of harpsichord, organ, and piano music from the Baroque period to the present. Suites, sonatas, and smaller forms are studied with emphasis on changes of style and idiom. (Bernstein.)

## MUSIC

### MUSIC 166. SURVEY OF THE OPERA. (3)

Second semester. Prerequisite, Music 120, 121 or the equivalent. A study of the music, librettos, and composers of the standard operas. (Staff.)

### MUSIC 167. SYMPHONIC MUSIC. (3)

First semester. Summer session. Prerequisite, Music 120, 121 or the equivalent. The study of orchestral music from the Baroque period to the present. The concerto, symphony, overture, and other forms are examined. (Ulrich.)

### MUSIC 168. CHAMBER MUSIC. (3)

Second semester. Prerequisite, Music 120, 121 or the equivalent. The history and literature of chamber music from the early Baroque period to the present. Music for trio sonata, string quartet and quintet, and combinations of piano and string instruments is studied. (Ulrich.)

### MUSIC 169. CHORAL MUSIC. (3)

First semester. Prerequisite, Music 120, 121 or the equivalent. The history and literature of choral music from the Renaissance to the present, with discussion of related topics such as Gregorian chant, vocal chamber music, etc. (Bernstein.)

### MUSIC 175. CANON AND FUGUE. (3)

Prerequisite, Music 146 or the equivalent. Composition and analysis of the canon and fugue in the styles of the eighteenth, nineteenth, and twentieth centuries. (Trimble.)

## *For Graduates*

### MUSIC 200. ADVANCED STUDIES IN THE HISTORY OF MUSIC. (3)

First semester. Prerequisite, Music 120, 121, and consent of instructor. A critical study of one style period (Renaissance, Baroque, etc.) will be undertaken. The course may be repeated for credit, since a different period will be chosen each time it is offered. (Bernstein.)

### MUSIC 201. SEMINAR IN MUSICOLOGY. (3)

Prerequisites, Music 120, 121 and consent of instructor. The work of one major composer (Bach, Beethoven, etc.) will be studied, with emphasis on musicological method. The course may be repeated for credit, since a different composer will be chosen each time it is offered. (Staff.)

### MUSIC 202. PRO-SEMINAR IN THE HISTORY AND LITERATURE OF MUSIC. (3)

Prerequisites, Music 121 and graduate standing. An introduction to graduate study in the history and literature of music. Bibliography and methodology of systematic and historical musicology. (Staff.)

### MUSIC 203. SEMINAR IN MUSICOLOGY. (3)

Prerequisites, Music 121 and graduate standing. An intensive course in one of the areas of musicology such as performance practices, history of music theory, history of notation, or ethnomusicology. Since a cycle of subjects will be studied, the course may be repeated for credit. (Bernstein.)



**MUSIC 204. AMERICAN MUSIC. (3)**

Prerequisites, Music 121 and graduate standing. A lecture course in the history of American art music from Colonial times to the present. (Staff.)

**MUSIC 206. ADVANCED MODAL COUNTERPOINT. (3)**

Prerequisites, Music 146 or the equivalent, and graduate standing. An intensive course in the composition of music in the style of the late Renaissance. Analytical studies of the music of Palestrina, Lasso, and Byrd. (Trimble.)

**MUSIC 207. THE CONTEMPORARY IDIOM. (3)**

Prerequisite, Music 144 or the equivalent, and graduate standing. Composition and analysis in the twentieth-century styles, with emphasis on techniques of melody, harmony, and counterpoint. (Trimble.)

**MUSIC 208. ADVANCED ORCHESTRATION. (3)**

Prerequisites, Music 148 or the equivalent, and graduate standing. Orchestration projects in the styles of Debussy, Ravel, Stravinsky, Schoenberg, Bartok, and others. (Trimble.)

**MUSIC 209. SEMINAR IN MUSICAL COMPOSITION. (3)**

Prerequisites, Music 144 or the equivalent, and graduate standing. An advanced course in musical composition. (Trimble.)

**MUSIC 212, 213. INTERPRETATION, PERFORMANCE, AND ANALYSIS OF THE STANDARD REPERTOIRE. (2-4, 2-4).**

Prerequisite, consent of graduate faculty in the Department. A seminar in analysis and interpretation for the graduate performer, with advanced instruction at the instrument of the works studied. In Music 213 a seminar paper and a full length recital are required. (Staff.)

**MUSIC 218. TEACHING THE THEORY, HISTORY, AND LITERATURE OF MUSIC. (3)**

Prerequisite, graduate standing and consent of instructor. A course in teaching methodology, with emphasis on instruction at the college level. (Ulrich.)

**MUSIC 399. THESIS RESEARCH. (3-6)**

Research in Theory or History and Literature of Music, and Musical Composition. May be repeated for credit. (Staff.)

**APPLIED MUSIC**

*Course number.* A new student or one taking applied music for the first time at this University should register for Music X. He will receive the proper classification at the end of his first semester in the Department. Special fee of \$40.00 per semester for each applied-music course.

*Section number:* Every student taking an applied-music course should, in addition to registering for the proper course number, indicate the instrument chosen by adding a section number as follows:

Sec. 1, Piano  
Sec. 2, Voice

Sec. 3, Violin  
Sec. 4, Viola

## APPLIED MUSIC

Sec. 5, Cello  
Sec. 6, Bass  
Sec. 7, Flute  
Sec. 8, Oboe  
Sec. 9, Clarinet  
Sec. 10, Bassoon  
Sec. 11, Horn

Sec. 12, Trumpet  
Sec. 13, Trombone  
Sec. 14, Tuba  
Sec. 15, Euphonium  
Sec. 16, Organ  
Sec. 17, Percussion  
Sec. 18, Saxophone

### MUSIC 12, 13. APPLIED MUSIC. (2-4 HOURS EACH COURSE)

First and second semesters. Freshman course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for piano majors in the B. Music curriculum only. Special fee of \$40.00 per semester. The student will register for Music 12, if taken for two hours credit; and Music 12D if taken for four hours credit. The same principle applies to Music 13 and Music 13D. (Staff.)

### MUSIC 52, 53. APPLIED MUSIC. (2-4 HOURS EACH COURSE)

First and second semesters. Sophomore course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental majors in the B. Music curriculum only. Prerequisite, Music 13 (or 13D) on the same instrument. Special fee of \$40.00 per semester. The student will register for Music 52, if taken for two hours credit; and Music 52D, if taken for four hours credit. The same principle applies to Music 53 and Music 53D. (Staff.)

### MUSIC 112, 113. APPLIED MUSIC. (2-4 HOURS EACH COURSE)

First and second semesters. Junior course. Two half hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B. Music curriculum only. Prerequisite, Music 53 (or 53D) on the same instrument. Special fee of \$40.00 per semester. The student will register for Music 112, if taken for two hours credit; and Music 112D, if taken for four hours credit. The same principle applies to Music 113 and Music 113D. (Staff.)

### MUSIC 152, 153. APPLIED MUSIC. (2-4 HOURS EACH COURSE)

First and second semesters. Senior course. Two half-hour lessons, and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B. Music curriculum only. Prerequisite Music 113 (or 113D) on the same instrument. Special fee of \$40.00 per semester. The student will register for Music 152, if taken for two hours credit; and Music 152D, if taken for four hours credit. The same principle applies to Music 153 and Music 153D. (Staff.)

## PHILOSOPHY

*Associate Professor and Head:* SCHLARETZKI

*Professor:* LAVINE

*Visiting Professor:* GRANT

*Associate Professor:* PASCH

*Assistant Professor:* CELARIER

*Visiting Lecturer:* BROWN

*Instructor:* MESSENGER

### PHIL. 1. INTRODUCTION TO PHILOSOPHY. (3)

Each semester. An introduction to some of the main problems of philosophy, and to some of the main ways of dealing with these problems. This course is one of a group of four courses within Elective Group I of the American Civilization Program. (Staff.)

### PHIL. 41. ELEMENTARY LOGIC AND SEMANTICS. (3)

Each semester. An introductory study of logic and language, intended to help the student increase his ability to employ language with understanding and to reason correctly. Topics treated include: the uses and abuses of language, techniques for making sound inferences, and the logic of science. (Staff.)

### PHIL. 45. ETHICS. (3)

An introduction to moral philosophy, including a critical examination of some important classic and contemporary systems of ethics, such as those of Aristotle, Kant, Mill, and Dewey. (Staff.)

### PHIL. 52. PHILOSOPHY IN LITERATURE. (3)

Second semester. Reading and philosophical criticism of novels and dramas containing ideas significant for ethics, social policy, and religion. (Lavine.)

### PHIL. 53. PHILOSOPHY OF RELIGION. (3)

First semester. This course seeks to provide the student with the means by which he may approach intelligently the main problems of religious thought: the nature of religious experience, the forms of religious expression, the conflicting claims of religion and science, and the place of religion in the community and in the life of the individual. (Messenger.)

### PHIL. 101. ANCIENT PHILOSOPHY. (3)

First semester. Prerequisites, Phil. 1 and either one additional course in philosophy or senior standing. A history of Greek thought from its beginnings to the time of Justinian. The chief figures discussed: The Presocratic philosophers, Socrates, Plato, Aristotle, Epicurus, the Stoic philosophers, and Plotinus. (Celarier, Messenger.)

### PHIL. 102. MODERN PHILOSOPHY. (3)

Second semester. Prerequisites, Phil. 1 and either one additional course in philosophy or senior standing. A history of philosophical thought in the West during the 16th, 17th, and 18th centuries. The chief figures discussed: Bacon, Galileo, Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. (Staff.)

## PHILOSOPHY

### PHIL. 103. NINETEENTH CENTURY PHILOSOPHY. (3)

Second semester. Prerequisites, Phil. 1 and either one additional course in philosophy or senior standing. A survey of philosophy in the nineteenth century through a consideration of such writers as Hegel, Schopenhauer, Nietzsche, Spencer, Marx, Comte, Mill, Mach, and Bradley. (Lavine.)

### PHIL. 104. TWENTIETH CENTURY PHILOSOPHY. (3)

First semester. Prerequisites, Phil. 1 and either one additional course in philosophy or senior standing. A survey of philosophy in the twentieth century through a consideration of representative figures in England, Europe, and America. Among the theories to be studied are logical atomism (Russell, Wittgenstein), positivism (Carnap, Ayer), existentialism and phenomenology (Sartre, Husserl), naturalism and realism (Dewey, Santayana). (Staff.)

### PHIL. 105. PHILOSOPHY IN AMERICA. (3)

Second semester. Prerequisite, Phil. 1. A survey of philosophical thought in America from the eighteenth century to the present. Special attention is given to Edwards, Jefferson, Emerson, Royce, Peirce, James, and Dewey. (Messenger, Schlaretzki.)

### PHIL. 123, 124. PHILOSOPHIES MEN LIVE BY. (3, 3)

Not offered on College Park campus. An exploration of the fundamental beliefs which determine what men make of their lives and of the world they live in. Classic statements of these beliefs by great philosophers will be chosen for class discussion on the basis of their significance for the problems confronting modern man.

### PHIL. 130. THE CONFLICT OF IDEALS IN WESTERN CIVILIZATION. (3)

First semester. A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the U. S. and Russia. (Staff.)

### PHIL. 141. PHILOSOPHY OF LANGUAGE. (3)

Prerequisite, Phil. 41. An inquiry into the nature and function of language and other forms of symbolism. (Staff.)

### PHIL. 145. ETHICAL THEORY. (3)

Prerequisite, Phil. 1 or 45. Contemporary problems having to do with the meanings of the principal concepts of ethics and with the nature of moral reasoning. (Schlaretzki.)

### PHIL. 147. PHILOSOPHY OF ART. (3)

An inquiry into the nature and functions of art. The course will begin with an examination of the relations between art and imitation, art and craft, art and beauty, art and pleasure, art and form, art and expression, art and not-art and good, bad, and great art, and conclude with a consideration of the uses of art, propagandistic, religious, escapist, and therapeutic. (Staff.)

### PHIL. 152. PHILOSOPHY OF SOCIAL AND HISTORICAL CHANGE. (3)

First semester. A survey and an assessment of the religious, the philosophic, and the scientific approaches to socio-historic change, including the theories of linear progress, evolutionary progress, cyclical repetition, Hegelian-Marxian dialectic, Weberian secularization and bureaucratization. (Lavine.)



**PHIL. 154. POLITICAL AND SOCIAL PHILOSOPHY. (3)**

Second semester. A systematic treatment of the main philosophical issues encountered in the analysis and evaluation of social (especially political) institutions. (Schlaretzki.)

**PHIL. 155. SYMBOLIC LOGIC. (3)**

Phil. 41 or Math. 3 recommended but not required. An introduction to the concepts and techniques of modern formal logic by means of matrix and axiomatic developments of the sentential calculus and an examination of the first-order predicate calculus in a system of natural deduction. (Pasch.)

**PHIL. 156. PHILOSOPHY OF SCIENCE. (3)**

Prerequisites, Phil. 41 and either 101 or 102; or consent of instructor. An inquiry into the relations of the sciences, the nature of observation, hypotheses, verification, experiment, measurement, scientific laws and theories, the basic concepts and presuppositions of science, and the relations of science to society. (Staff.)

**PHIL. 157. THEORY OF MEANING. (3)**

Prerequisites, Phil. 41 and 102. A study of theories about the meaning of linguistic expressions, including the verification theory and the theory of meaning as use. Among topics to be considered are naming, referring, synonymy, intension and extension, and ontological commitment. Such writers as Mill, Frege, Russell, Lewis, Carnap, Wittgenstein, Austin, and Quine will be discussed. (Staff.)

**PHIL. 169. TOPICS IN CONTEMPORARY PHILOSOPHY. (3)**

Prerequisite, Phil. 102. An intensive examination of contemporary problems and issues. Source material will be selected from recent books and articles. (Staff.)

**PHIL. 170. METAPHYSICS. (3)**

First semester. Prerequisites, Phil. 101 and 102. Phil. 41 recommended. A study of some central metaphysical concepts (such as substance, relation, causality, and time) and of the nature of metaphysical thinking. (Pasch.)

**PHIL. 171. THEORY OF KNOWLEDGE. (3)**

Second semester. Prerequisites, Phil. 101 and 102. Phil. 41 recommended. The origin, nature, and validity of knowledge will be considered in terms of some philosophic problems about perceiving and thinking, knowledge and belief, thought and language, truth and confirmation. (Pasch.)

**PHIL. 175. TOPICS IN SYMBOLIC LOGIC. (3)**

Prerequisite, Phil. 155. (Staff.)

**PHIL. 176. INDUCTION AND PROBABILITY. (3)**

Prerequisite, consent of instructor. A study of inferential forms, with emphasis on the logical structure underlying such inductive procedures as estimating and hypothesis-testing. Decision-theoretic rules relating to induction will be considered, as well as classic theories of probability and induction. (Staff.)

**PHIL. 180. THE PHILOSOPHY OF PLATO. (3)**

First semester. Prerequisites, Phil. 101 and 102. A critical study of selected dialogues. (Celarier.)

## PHILOSOPHY

### PHIL. 181. THE PHILOSOPHY OF ARISTOTLE. (3)

Second semester. Prerequisites, Phil. 101 and 102. A critical study of selected portions of Aristotle's writings. (Celarier.)

### PHIL. 182. MEDIEVAL PHILOSOPHY. (3)

Prerequisite, Phil. 101 or 102. A history of philosophic thought in the West from the close of the Classical period to the Renaissance. Based on readings of the Stoics, early Christian writers, Neoplatonists, later Christian writers and Schoolmen. (Celarier.)

### PHIL. 184. THE CONTINENTAL RATIONALISTS. (3)

Prerequisites, Phil. 101 and 102. A critical study of the systems of some of the major 17th and 18th century rationalists, with special reference to Descartes, Spinoza, and Leibniz. (Staff.)

### PHIL. 185. THE BRITISH EMPIRICISTS. (3)

Prerequisites, Phil. 101 and 102. A critical study of selected writings of Locke, Berkeley, and Hume. (Staff.)

### PHIL. 186. THE PHILOSOPHY OF KANT. (3)

Prerequisites, Phil. 101 and 102. A critical study of selected portions of Kant's writings. (Lavine.)

### PHIL. 190. HONORS SEMINAR. (3)

Each semester. Open to honors students in philosophy and, by permission of the instructor, to honors students in other departments. Research in selected topics, with group discussion. (Staff.)

### PHIL. 191, 192, 193, 194. TOPICAL INVESTIGATIONS. (1-3)

Each semester. (Staff.)

### PHIL. 255. SEMINAR IN THE HISTORY OF PHILOSOPHY. (3)

Prerequisite, consent of the instructor. (Staff.)

### PHIL. 256. SEMINAR IN THE PROBLEMS OF PHILOSOPHY. (3)

Prerequisite, consent of the instructor. (Staff.)

### PHIL. 260. SEMINAR IN ETHICS. (3)

Prerequisite, consent of instructor. (Schlaretzki.)

### PHIL. 261. SEMINAR IN ESTHETICS. (3)

Prerequisite, consent of instructor. (Staff.)

### PHIL. 270. SEMINAR IN METAPHYSICS. (3)

Prerequisite, consent of instructor. (Staff.)

### PHIL. 271. SEMINAR IN THEORY OF KNOWLEDGE. (3)

Prerequisite, consent of instructor. (Pasch.)

### PHIL. 292. SELECTED PROBLEMS IN PHILOSOPHY. (1-3)

Each semester. Prerequisite, consent of the instructor. (Staff.)

### PHIL. 399. RESEARCH IN PHILOSOPHY. (1-12)

Each semester. (Staff.)

# PHYSICS AND ASTRONOMY

*Professor and Head:* TOLL.

*Professors:* ESTABROOK, FERRELL, GRIEM, HORNYAK, MACDONALD, MARION, MYERS, SNOW, WEBER, AND WESTERHOUT.

*Professors (Part-Time):* FRIEDMAN, HAYWARD, RADO, AND SLAWSKY.

*Research Professors:* BURGERS\*, OPIK, PAI\*, AND WESKE\*.

*Visiting Professors:* KALLEN, SHAKESHAFT.

*Visiting Professors (Part-Time):* GLASSER, F. McDONALD, AND MUSEN.

*Associate Professors:* ALLEY, DAY, ERICKSON, GLOVER, GREENBERG, HOLMGREN, LASTER, MISNER, SMITH, STEINBERG, STERN, SUCHER, WALL, YODH, ZIPOY, AND G. ZORN.

*Associate Research Professors:* FALLER\* AND TIDMAN\*.

*Associate Professor (Part-Time):* BENNETT.

*Visiting Associate Professors:* JAFFE AND WAGGONER.

*Assistant Professors:* ARMSTRONG, BARDASIS, BEALL, BELL, BHAGAT, CONDON, DESILVA, DETENBECK, FALK, FIVEL, FOWLER, GLICK, GREINER, HINTZ, KACSER, KEHOE, KIM, KOCH, ONEDA, PATI, PRANGE, RODBERG, VAN WIJK, WHATLEY, ZAPOLSKY, AND B. S. ZORN.

*Assistant Research Professors:* DEBOER\*, GUERNSEY\*, MONTGOMERY\*, WEISS\*, AND WILKERSON\*.

*Visiting Assistant Professors:* ALTMAN, BURNSTEIN, FORSYTH, KORFF, SCHLITT, AND YOUNG.

*Assistant Professor (Part-Time):* DIXON.

*Research Associates:* BETTINGER, EZAWA, FULDE, GHOSH, ISLAM, LAM, LUDEMANN, MESHKOV, PRASAD, ROUSH, SAIEDY, SIMKIN, SINGH, TSUYA, WOODS, AND YABUSHITA.

*Postdoctoral Fellows:* CURRIE, LONGE.

## PHYS. 1. ELEMENTS OF PHYSICS: MECHANICS, HEAT, AND SOUND. (3)

First semester. Three lectures a week. Prerequisite, successful passing of the qualifying examination in elementary mathematics. Lecture demonstration fee. \$3.00. The first half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* (Alley.)

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\*Member of the Institute for Fluid Dynamics and Applied Mathematics.

## PHYSICS AND ASTRONOMY

### PHYS. 2. ELEMENTS OF PHYSICS: MAGNETISM, ELECTRICITY, AND OPTICS. (3)

Second semester. Three lectures a week. Prerequisite, Phys. 1. Lecture demonstration fee, \$3.00. The second half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* (Alley.)

### PHYS. 3. INTRODUCTION TO PHYSICS. (4)

Second semester. Three lectures and one two-hour laboratory per week. Prerequisite, qualification to enter Math. 10. Intended for students majoring in neither the physical nor biological sciences. A study of the development of some of the basic ideas of physical science. (Beall.)

### PHYS. 10, 11. FUNDAMENTALS OF PHYSICS. (4, 4)

First and second semesters. Three lectures, one recitation, and one two-hour laboratory period a week. Prerequisite, entrance credit in trigonometry or Math. 11 or concurrent enrollment in Math 18. Lecture demonstration and laboratory fee, \$10.00 per semester. A course in general physics treating the fields of mechanics, heat, sound, electricity, magnetism, optics, and modern physics. *This course satisfies the minimum requirements of medical and dental schools.* (Yodh, Beall, Estabrook, Staff.)

### PHYS. 15, 16. INTRODUCTORY PHYSICS: MECHANICS, FLUIDS, HEAT, AND SOUND. (4, 4)

First and second semesters. Three lectures and two demonstration periods a week. Prerequisites, a high school physics course and concurrent enrollment in Math. 18, 19, or consent of instructor. Lecture demonstration fee, \$3.00 per semester. The first half of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences. (Waggoner, Korff.)

### PHYS. 17. INTRODUCTORY PHYSICS: ELECTRICITY AND MAGNETISM. (4)

First semester. Three lectures and two demonstration periods a week. Prerequisites, Phys. 15, 16 and previous or concurrent enrollment in Phys. 60 and Math. 20. Lecture demonstration fee, \$3.00. The third quarter of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences. (Hornyak.)

### PHYS. 18. INTRODUCTORY PHYSICS: OPTICS AND MODERN PHYSICS. (4)

Second semester. Three lectures and two demonstration periods a week. Prerequisites, Phys. 17 and previous or concurrent enrollment in Phys. 60 and Math. 21, or consent of instructor. Lecture demonstration fee, \$3.00. The last quarter of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences. (Hornyak.)

### PHYS. 20. GENERAL PHYSICS: MECHANICS, HEAT, AND SOUND. (5)

First and second semesters. Three lectures, two recitations and one two-hour laboratory period a week. Math. 20 to be taken concurrently. Lecture demonstration and laboratory fee, \$10.00. The first half of a course in general physics. *Required of all students in the engineering curricula.*

(Burnstein, Estabrook, Fivel, MacDonald, Staff.)



**PHYS. 21. GENERAL PHYSICS: ELECTRICITY, MAGNETISM, AND OPTICS. (5)**

First and second semesters. Three lectures, two recitations, and one two-hour laboratory period a week. Prerequisites, Phys. 20, Math. 21 to be taken concurrently. Lecture demonstration and laboratory fee, \$10.00. The second half of a course in general physics. *Required of all students in the engineering curricula.* (Burnstein, Estabrook, Fivel, MacDonald, Staff.)

**PHYS. 50, 51. INTERMEDIATE PHYSICS. (2, 2)**

First and second semesters. Two lectures a week. Prerequisite, Phys. 11 or 21. (Whatley.)

**PHYS. 52. HEAT. (3)**

First semester. Three lectures a week. Prerequisite, Phys. 11 or 21. Math. 20 is to be taken concurrently. (Schamp.)

**PHYS. 53. NUCLEAR PHYSICS AND RADIOACTIVITY. (3)**

Second semester. (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, Phys. 11 or 21. (Young.)

**PHYS. 54. SOUND. (3)**

Second semester. (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, Phys. 11 or 21. Math. 21 is to be taken concurrently. (Myers.)

**PHYS. 60. INTERMEDIATE PHYSICS EXPERIMENTS. (2 credits per semester)**

Four hours of laboratory work per week. Prerequisite, Phys. 11 or 21 or concurrent enrollment in Phys. 17 or Phys. 18. Laboratory fee, \$10.00 per semester. Selected experiments. (E. Stern, Kehoe.)

**PHYS. 100. ADVANCED EXPERIMENTS. (2 credits per semester)**

Four hours of laboratory work per week. Prerequisite, four credits of Phys. 60 or consent of instructor. Laboratory fee, \$10.00 per semester. Selected fundamental experiments in electricity and magnetism, elementary electronics, and optics. (Kehoe, Glover.)

**PHYS. 102. OPTICS. (3)**

Second semester. Three lectures a week. Prerequisites, Phys. 11 or 21 and Math. 21. It is suggested, but not required, that Phys. 60 or Phys. 100 be taken concurrently with this course. Geometrical optics, optical instruments, wave motion, interference and diffraction, and other phenomena in physical optics. (Korff.)

**PHYS. 103. APPLIED OPTICS. (3)**

First semester. (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, Phys. 102. A detailed study of physical optics and its applications. (Alley.)

**PHYS. 104, 105. ELECTRICITY AND MAGNETISM. (3, 3)**

First and second semesters. Three lectures a week. Prerequisites, Phys. 11 or 21; Math. 21. Electrostatics, direct current and alternating current circuitry, electromagnetic effects of steady currents, electromagnetic induction, radiation, development of Maxwell's equations, Poynting vector, wave equations, and electronics. (Steinberg.)

## PHYSICS AND ASTRONOMY

### PHYS. 106, 107. THEORETICAL MECHANICS. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, Phys. 51 or consent of instructor. A detailed study of Newtonian mechanics. Dynamics, the motion of rigid bodies, oscillation problems, etc., are studied. Lagrange's equation of the first kind and the Hamilton-Jacobi equation are introduced.

(Marion.)

### PHYSICS 109. ELECTRONIC CIRCUITS. (4)

Second semester. Three hours of lecture and two of laboratory per week. Prerequisite, Physics 100 and concurrent enrollment in Physics 105 or Physics 128. Theory of semi-conductor and vacuum tube circuits. Laboratory fee, \$10.00. Application in experimental physics.

(Condon.)

### PHYS. 110. SPECIAL LABORATORY PROJECTS IN PHYSICS. (1, 2, or 3)

Two hours laboratory work a week for each credit hour. One to three credits may be taken concurrently each semester. (Will be given only with sufficient demand.) Prerequisite, Phys. 100 and consent of adviser. Laboratory fee, \$10.00 per credit hour. Selected advanced experiments.

(Staff.)

### PHYS. 111. PHYSICS SHOP TECHNIQUES. (1)

First semester. One three-hour laboratory per week. Prerequisite, Phys. 100 or consent of instructor. Laboratory fee, \$10.00. Machine tools, design and construction of laboratory equipment.

(Horn.)

### PHYS. 114, 115. INTRODUCTION TO BIOPHYSICS. (2, 2)

First and second semesters. (Will be given only with sufficient demand.) Two lectures a week. Prerequisites, intermediate physics and Math. 21. A study of the physical principles involved in biological processes, with particular emphasis on current research in biophysics.

(Mullins.)

### PHYS. 116, 117. INTRODUCTION TO FLUID DYNAMICS. (3, 3)

Three lectures a week. Prerequisites, Phys. 106 and Math. 21. Kinematics of fluid flow, properties of incompressible fluids, complex variable methods of analysis, wave motions.

(De Boer.)

### PHYS. 118. INTRODUCTION TO MODERN PHYSICS. (3)

Each semester. Three lectures a week. Prerequisites, general physics and integral calculus, with some knowledge of differential equations and a degree of maturity as evidenced by having taken one or more of the courses Phys. 50 through Phys. 110. Introductory discussion of special relativity, origin of quantum theory, Bohr atom, wave mechanics, atomic structure, and optical spectra.

(Zorn.)

### PHYS. 119. MODERN PHYSICS. (3)

Each semester. Three lectures a week. Prerequisite, Phys. 118. A survey of nuclear physics, x-rays, radioactivity, wave mechanics, and cosmic radiation.

(Zorn.)

### PHYS. 120. NUCLEAR PHYSICS. (4)

Each semester. Four lectures a week. Prerequisite, Phys. 119. An introduction to nuclear physics at the pre-quantum-mechanics level. Properties of nuclei; radioactivity; nuclear systematics; nuclear moments; the shell model, interaction of charged particles and gamma rays with matter; nuclear detector; accelerators; nuclear reactions; beta decay; high energy phenomena.

(Armstrong.)

**PHYS. 121. NEUTRON PHYSICS AND FISSION REACTORS. (4)**

Second semester. Four lectures a week. Prerequisite, Phys. 120. Neutron diffusion and reactor physics. (Marion.)

**PHYS. 122. PROPERTIES OF MATTER. (4)**

Each semester. Four lectures a week. Prerequisite, Phys. 119 or equivalent. Introduction to solid state physics. Electro-magnetic, thermal, and elastic properties of metals, semiconductors and insulators. (Glover, E. Stern.)

**PHYSICS 123. INTRODUCTION TO ATMOSPHERIC AND SPACE PHYSICS. (3)**

Second semester. Three lectures a week. Prerequisite, Physics 127 and Physics 118 or consent of instructor. Motions of charged particles in magnetic fields, aspects of plasma physics related to cosmic rays and radiation belts, atomic phenomena in the atmosphere, thermodynamics and dynamics of the atmosphere. (Laster.)

**PHYS. 126. KINETIC THEORY OF GASES. (3)**

Three lectures a week. Prerequisites, Phys. 107 and Math. 21. Dynamics of gas particles, Maxwell-Boltzmann distribution, diffusion, Brownian motion, etc. (Mason.)

**PHYS. 127, 128. ELEMENTS OF MATHEMATICAL PHYSICS.**

Mechanics, Potential Theory, and Electromagnetic Waves (4, 4). First and second semesters. Prerequisite, Physics 18 and Mathematics 21, or consent of instructor. A careful study of mathematical approaches used in mechanics, electricity and magnetism, and physical optics. (Marion.)

**PHYS. 130, 131. BASIC CONCEPTS OF PHYSICS. (2, 2)**

First and second semesters. Two lectures a week. Prerequisite, junior standing. Lecture demonstration fee, \$2.00 per semester. A primarily descriptive course intended mainly for those students in the liberal arts who have not had any other course in physics. This course does not satisfy the requirements of professional school nor serve as a prerequisite or substitute for other physics courses. The main emphasis in the course will be on the concepts of physics, their evolution and their relations to other branches of human endeavor. (Armstrong.)

**PHYS. 140, 141. ATOMIC AND NUCLEAR PHYSICS LABORATORY. (3, 3)**

First and second semesters. One lecture and four hours of laboratory a week. Prerequisites, two credits of Phys. 100 and consent of instructor. Laboratory fee, \$10.00 per semester. Classical experiments in atomic physics and more sophisticated experiments in current techniques in nuclear physics. Enrollment is limited to ten students. (Detenbeck, Condon, Holmgren.)

**PHYS. 144, 145. METHODS OF THEORETICAL PHYSICS. (4, 4)**

First and second semesters. Prerequisite, Physics 127, 128. A survey of basic ideas in thermodynamics and statistical mechanics. An introduction to electrodynamics, quantum mechanics, and relativity. Primary emphasis will be placed upon the mathematical methods involved in our understanding of those topics. (Ferrell.)

**PHYS. 150. SPECIAL PROBLEMS IN PHYSICS.**

Given each semester. Prerequisite, major in physics and consent of adviser. Research or special study. Credit according to work done. Laboratory fee, \$10.00 per credit hour when appropriate. (Staff.)



## PHYSICS AND ASTRONOMY

### PHYS. 152. INTRODUCTION TO THERMODYNAMICS AND STATISTICAL MECHANICS. (3)

First semester. Three lectures a week. Prerequisites, Mathematics 21, Physics 18 or 51, or consent of the instructor. Introduction of basic concepts in thermodynamics and statistical mechanics. (Bhagat.)

### PHYS. 190. INDEPENDENT STUDIES SEMINAR.

Credit according to work done, each semester. Enrollment is limited to students admitted to the Independent Studies Program in Physics. (Staff.)

### *For Graduates*

Of the courses which follow, 200, 201, 212, 213, 234, 235, 237 and 258 are given every year; all others will be given according to demand.

### PHYS. 200, 201. THEORETICAL DYNAMICS. (3, 3)

Each semester. Three lecture hours per week. Prerequisite, Physics 127 or equivalent. This basic course for graduate study in physics covers advanced classical mechanics, hydrodynamics, elasticity, thermodynamics, and statistical mechanics. It is normally taken concurrently with Physics 204, 205. (Myers, Glick, Nisner.)

### PHYS. 202, 203. ADVANCED DYNAMICS. (2, 2)

First and second semesters. Two lectures a week. Prerequisite, Phys. 200. A detailed study of advanced classical mechanics. (Myers.)

### PHYS. 204, 205. ELECTRODYNAMICS. (3, 3)

Each semester. Three lecture hours per week. Prerequisite, Physics 128 or equivalent. This basic course for graduate study in physics covers electrodynamics and relativity. It is normally taken concurrently with Physics 200, 201. (Sucher, Zipoy, Schlitt.)

### PHYS. 206. PLASMA PHYSICS. (3)

Three hours of lecture per week. Prerequisite, Physics 204, 205. Knowledge of complex variable theory is also desirable. A detailed study of plasma physics. (Tidman.)

### PHYS. 208. THERMODYNAMICS. (3)

First semester. Three lectures per week. Prerequisite, Phys. 201. The first and second laws of thermodynamics are examined and applied to homogeneous and non-homogeneous systems, calculations of properties of matter, the derivation of equilibrium condition and phase transitions, the theory of irreversible processes. (Schamp.)

### PHYS. 210. STATISTICAL MECHANICS. (3)

Second semester. Three lectures a week. Prerequisites, Phys. 119 and Phys. 201. A study of the determination of microscopic behavior of matter from microscopic models. Microcanonical, canonical, and grand canonical models. Applications to solid state physics and the study of gases. (Weiss.)

### PHYS. 212, 213. INTRODUCTION TO QUANTUM MECHANICS. (4, 4)

Each semester. Four lectures per week. Prerequisite, Phys. 200 or an outstanding undergraduate background in physics. A study of the Schroedinger



equation, matrix formulations of quantum mechanics, approximation methods, scattering theory, etc., and applications to solid state, atomic, and nuclear physics. (Day, Falk, Weber.)

**PHYS. 214. THEORY OF ATOMIC SPECTRA. (3)**

First semester. Three lectures a week. Prerequisite, Phys. 213. A study of atomic spectra and structure—one and two electron spectra, fine and hyperfine structure, line strengths, line width, etc. (Wilkerson.)

**PHYS. 215. THEORY OF MOLECULAR SPECTRA. (3)**

Second semester. Three lectures a week. Prerequisite, Phys. 214. The structure and properties of molecules as revealed by rotational, vibrational, and electronic spectra. (Vanderslice.)

**PHYS. 216, 217. MOLECULAR PHYSICS. (2, 2)**

Two lectures a week. Prerequisite, Phys. 213. Molecular theory of gases and liquids, ensemble theory, analysis of empirical models for molecular interactions, theory of Coulomb interactions between charge distribution. (Mason.)

**PHYS. 218, 219. X-RAYS AND CRYSTAL STRUCTURE. (3, 3)**

Three lectures per week. Prerequisite, Phys. 201. A detailed study of crystal structure of solids and of x-rays. (Glover.)

**PHYS. 220. APPLICATION OF X-RAY AND ELECTRON DIFFRACTION METHODS. (2)**

Two laboratory periods a week. Prerequisite, concurrent enrollment in Phys. 218. The investigation of crystal structure, using x-rays and electron diffraction. (E. Stern.)

**PHYS. 221. UPPER ATMOSPHERE AND COSMIC RAY PHYSICS. (2)**

Second semester. Two lectures a week. Prerequisite, Phys. 200 or consent of instructor. Structure of the atmosphere, rocket and satellite experiments, primary and secondary cosmic rays, origins of cosmic rays, geomagnetic theory. (Laster.)

**PHYS. 222, 223. BOUNDARY-VALUE PROBLEMS OF THEORETICAL PHYSICS. (2, 2)**

Prerequisite, Phys. 205. (Falk, Weiss.)

**PHYS. 224, 225. SUPERSONIC AERODYNAMICS AND COMPRESSIBLE FLOW. (2, 2)**

Two lectures a week. Prerequisite, Phys. 201. (Pai.)

**PHYS. 226, 227. THEORETICAL HYDRODYNAMICS. (3, 3)**

Three lectures a week. Prerequisite, Phys. 201. A detailed study of advanced fluid dynamics. (Burgers.)

**PHYS. 228. SYMMETRY PROBLEMS IN PHYSICS. (3)**

Three lectures per week. Prerequisite, Physics 213. A study of general methods of classification of physical systems by their symmetries and invariance properties, especially in quantum field theory applications. (Misner, Toll.)

## PHYSICS AND ASTRONOMY

### PHYS. 230. SEMINAR.

Seminars on various topics in advanced physics are held each semester, with the contents varied each year. One credit for each seminar each semester.

(Staff.)

### PHYS. 231. APPLIED PHYSICS SEMINAR.

(One credit for each semester.)

(Staff.)

### PHYS. 232, 233. HYDROMECHANICS SEMINAR. (1, 1)

First and second semesters. One meeting a week.

(Staff.)

### PHYS. 234, 235. THEORETICAL NUCLEAR PHYSICS. (3, 3)

Three lectures a week. Prerequisites, Phys. 120 and Phys. 213. Nuclear properties and reactions, nuclear forces, two, three, and four body problems, nuclear spectroscopy, beta-decay, and related topics. (MacDonald, Rodberg.)

### PHYS. 236. THEORY OF RELATIVITY. (3)

Three lectures a week. Prerequisite, Phys. 200. A study of Einstein's special theory of relativity and some consequences, and a brief survey of the foundations of general relativity. (Weber, Misner.)

### PHYS. 237. RELATIVISTIC QUANTUM MECHANICS. (3)

First semester. Three lectures a week. Prerequisite, Phys. 213. Classical field theory, Klein-Gordon and Dirac equations, invariance properties, second quantization, renormalization, and related topics. (Greenberg, Kim.)

### PHYS. 238. QUANTUM THEORY—SELECTED TOPICS. (3)

Three lectures a week. Prerequisite, Phys. 237.

(Staff.)

### PHYS. 239. ELEMENTARY PARTICLES. (3)

Three lectures a week. Prerequisite, Phys. 237. Survey of elementary particles and their properties, quantum field theory, meson theory, weak interactions, possible extensions of elementary particle theory. (Day, Snow.)

### PHYS. 240, 241. THEORY OF SOUND AND VIBRATIONS. (3, 3)

Three lectures a week. Prerequisite, Phys. 201. A detailed study of acoustics and the theory of vibrations. (Weber, Zipoy.)

### PHYS. 242, 243. THEORY OF SOLIDS. (3, 3)

First and second semesters. Two lectures a week. Prerequisite, Phys. 213. Properties of metals lattice vibrations and specific heats, Boltzmann, Fermi-Dirac, and Bose-Einstein statistics, free electron gas theories, band theory of metals.

(Prange.)

### PHYS. 245. SPECIAL TOPICS IN APPLIED PHYSICS.

(2 credits each semester.) Two lectures a week.

(Staff.)

### PHYS. 246, 247. SPECIAL TOPICS IN FLUID DYNAMICS. (2, 2)

Prerequisites, advanced graduate standing and consent of the instructor.

(Burgers.)

### PHYS. 248, 249. SPECIAL TOPICS IN MODERN PHYSICS. (2, 2)

Two lectures a week. Prerequisite, consent of instructor.

(Staff.)

**PHYS. 252, 253. NUCLEAR STRUCTURE PHYSICS. (3, 3)**

First and second semesters. Three lecture hours per week. Prerequisite, Phys. 120 or equivalent; co-requisite: Phys. 212, 213 or consent of instructor. Nuclear structure and nuclear reactions. Two-body scatterings; nucleon-nucleon forces and the deuteron. Neutron scattering; the optical model. Resonance reactions, phase-shift analysis, positions and properties of energy levels; the shell model. Direct reactions. Electromagnetic transitions. Photoreactions. The design of experiments; the extraction of parameters from experimental data and the comparison with nuclear models. (Marion, Holmgren.)

**PHYS. 258. QUANTUM FIELD THEORY. (3)**

Second semester. Three lectures a week. Prerequisite, Phys. 237. S-matrix, Feynman diagrams, scattering theory, renormalization, conservation laws, dispersion relations, and recent non-perturbation approaches to field theory. (Greenberg, Toll.)

**PHYS. 260. HIGH ENERGY PHYSICS. (3)**

Three lectures a week. Prerequisite, Phys. 237. Nuclear forces are studied by examining interactions at high energies. Meson physics scattering processes, and detailed analysis of high energy experiments. (Snow.)

**PHYS. 262, 263. AEROPHYSICS. (3, 3)**

Three lectures. Prerequisite, consent of the instructor. (Pai.)

**PHYS. 399. RESEARCH.**

Credit according to work done, each semester. Laboratory fee, \$10.00 per credit hour. Prerequisite, an approved application for admission to candidacy or special permission of the Physics Department. (Staff.)

(For Astronomy curriculum, see under ASTRONOMY, p. 42)

*Special Physics Courses For High School Science Teachers*

The courses in this section were especially designed for high school teachers and are not applicable to B.S., M.S., or Ph.D. degrees in physics without special permission of the Department of Physics and Astronomy. However, these courses can be included as part of a physics minor or as electives. No prerequisites are required.

**PHYS. 118A. ATOMS, NUCLEI, AND STARS. (3)**

Three lectures per week. An introduction to basic ideas of the constitution and properties of atomic and subatomic systems and of the overall structure of the universe. (Detenbeck.)

**PHYS. 122A. PROPERTIES OF MATERIALS. (3)**

Three lectures per week. An introduction to the study of solid state physics and the properties of fluids. (E. Stern.)

**PHYS. 160A. PHYSICS PROBLEMS. (1, 2 or 3)**

Lectures and discussion sessions arranged. (Laster.)

**PHYS. 170A. APPLIED PHYSICS. (3)**

Three lectures per week. (Hornyak.)

## PSYCHOLOGY

### PHYS. 199. NATIONAL SCIENCE FOUNDATION SUMMER INSTITUTE FOR TEACHERS OF SCIENCE SEMINAR. (1)

Arranged during summer session. Enrollment limited to participants in the N.S.F. Summer Institute. Laboratory fee, \$5.00. (Detenbeck, Staff.)

## CHEMICAL PHYSICS

(For an outline of this new interdepartmental program leading to the M.S. and Ph.D. degrees, write to the Institute of Molecular Physics, University of Maryland, College Park, for further details.)

## PSYCHOLOGY

*Professor and Head:* ANDREWS.

*Professors:* MCGINNIES, BRADY (PART-TIME), EDGERTON (PART-TIME), MAGOON, AND WALDROP.

*Associate Professors:* ANDERSON, DASTON, PUMROY AND WALDER.

*Assistant Professors:* BARTLETT, CLINE, GOLLUB, HEERMANN, MCINTIRE, TURNAGE, WARD, AND YARCZOWER.

Students who are interested in the Honors Program of the Department should arrange to discuss this program and their eligibility for it with the Head of the Department.

### PSYCH. 1. INTRODUCTION TO PSYCHOLOGY. (3)

First and second semesters. This course may be taken as Elective Group I of the American Civilization Program. A basic introductory course, intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution. (McGinnies and Staff.)

### PSYCH. 5. PERSONALITY AND ADJUSTMENT. (3)

First and second semesters. Prerequisite, Psych. 1. Introduction to the psychology of human personality and adjustment, with a view toward increasing self-understanding and developing an appreciation of the mental health movement and each individual's stake in it. (Staff.)

### PSYCH. 21. SOCIAL PSYCHOLOGY. (3)

First and second semesters. Prerequisite, Psych. 1. Personality and behavior as influenced by culture and interpersonal relations. Social influences on motivation, learning, memory, and perception. Attitudes, public opinion, propaganda, language and communication, leadership, ethnic differences, and group processes. (McGinnies, Cline, Ward.)



**PSYCH. 25. CHILD PSYCHOLOGY. (3)**

First semester. Prerequisite, Psych. 1. Behavioral analysis of normal development and normal socialization of the growing child. Leading theories of child nature and care, and their implications. (Pumroy.)

**PSYCH. 26. DEVELOPMENTAL PSYCHOLOGY. (3)**

First semester. Prerequisite, Psych. 1. Biological basis of behavioral development in relation to genetic, constitutional, anatomical, physiological, and environmental factors. Emphasis upon both phylogenetic and ontogenetic research findings in biological psychology. (Brady.)

**PSYCH. 90. STATISTICAL METHODS IN PSYCHOLOGY. (3)**

First and second semester. Prerequisite, Psych. 1 and Math. 1, 5, or 10 or equivalent. A basic introduction to quantitative methods used in psychological research; measures of central tendency, of spread, and of correlation. (Anderson, Bartlett, Heermann.)

*For Advanced Undergraduates and Graduates*

Graduate credits will be assigned only for students certified by the Department of Psychology as qualified for graduate standing.

**PSYCH. 110. EDUCATIONAL PSYCHOLOGY. (3)**

Prerequisite, Psych. 1 or equivalent. Researches on fundamental psychological problems encountered in education. Measurement and significance of individual differences; learning, motivation, transfer of training, and the educational implications of theories of intelligence. (Staff.)

**PSYCH. 122. ADVANCED SOCIAL PSYCHOLOGY. (3)**

Second semester. Prerequisites, Psych. 21 and 90 or consent of instructor. A systematic review of researches and points of view in regard to major problems in the field of social psychology. (McGinnies, Cline, Ward.)

**PSYCH. 123. LANGUAGE AND SOCIAL COMMUNICATION. (3)**

Second semester. Prerequisite, Psych. 21, senior standing, and consent of instructor. The nature and significance of verbal and non-verbal communication in social psychological processes including examination of relevant theoretical approaches to symbolic behavior. (McGinnies, Cline, Ward.)

**PSYCH. 131. ABNORMAL PSYCHOLOGY. (3)**

First and second semesters. Prerequisite, two courses in psychology, including Psych. 5. The nature, diagnosis, etiology, and treatment of mental disorders. (Staff.)

**PSYCH. 136. APPLIED EXPERIMENTAL PSYCHOLOGY. (3)**

Second semester. Prerequisite, Psych. 1 or consent of instructor. A study of basic human factors involved in the design and operation of machinery and equipment. Organized for students in engineering, industrial psychology, and the biological sciences. (Anderson.)

**PSYCH. 145. EXPERIMENTAL PSYCHOLOGY: SENSORY PROCESSES. (4)**

First and second semesters. Two lectures and two two-hour laboratory periods per week. Prerequisite, Psych. 90. Laboratory fee per semester, \$4.00. Pri-

## PSYCHOLOGY

marily for students who major or minor in psychology. A systematic survey of the laboratory methods, and techniques applied to sensory and perceptual processes. (McIntire, Turnage.)

### PSYCH. 146. EXPERIMENTAL PSYCHOLOGY: LEARNING, MOTIVATION AND PROBLEM SOLVING. (4)

First and second semesters. Two lectures and two two-hour laboratory periods per week. Prerequisite, Psych. 90. Laboratory fee, \$4.00 per semester. Primarily for students who major or minor in psychology. The experimental analysis of learning and motivational processes. (Yarczower, Gollub.)

### PSYCH. 147. EXPERIMENTAL PSYCHOLOGY: SOCIAL BEHAVIOR. (4)

First and second semesters. Two lectures and two two-hour laboratory periods per week. Prerequisite, Psych. 21 and Psych. 90 or equivalent. Laboratory fee, \$4.00 per semester. A laboratory course dealing with methods of studying behavior in the social context. Topics will include social perception and motivation, small groups, communication and persuasion. Consideration will be given to the techniques involved in laboratory experimentation, field studies, attitude scale construction, and opinion surveys. (McGinnies, Cline, Ward.)

### PSYCH. 148. PSYCHOLOGY OF LEARNING. (3)

First semester. Prerequisite, Psych. 145 and permission or Psych. 146. Review and analysis of the major phenomena and theories of human and animal learning, including an introduction to the fields of problem solving, thinking and reasoning behavior. (Gollub, Yarczower, Turnage.)

### PSYCH. 150. TESTS AND MEASUREMENTS. (3)

First and second semesters. Prerequisite, Psych. 90. Laboratory fee, \$4.00. Critical survey of measuring devices used in counseling, educational and industrial practice with an emphasis on the theory, development and standardization. Laboratory work will incorporate training in methodology of test development together with appropriate practice in the use of selected tests. (Waldrop, Bartlett.)

### PSYCH. 151. PSYCHOLOGY OF INDIVIDUAL DIFFERENCES. (3)

First and second semesters. Prerequisite, Psych. 150. Problems, theories, and researches related to psychological differences among individuals and groups. (Waldrop, Heermann.)

### PSYCH. 161. INDUSTRIAL PSYCHOLOGY. (3)

First and second semesters. Prerequisite, 6 hours in psychology. A course designed to aid in the understanding of the problems of people in a variety of work situations; serving as an introduction to such technical problems as personnel selection interviewing, morale supervision and management, and human relations in industry. Lecture, discussion and laboratory. (Bartlett, Heermann.)

### PSYCH. 180. PHYSIOLOGICAL PSYCHOLOGY. (3)

First semester. Prerequisite, Psych. 145 or 146. An introduction to research on the physiological basis of human behavior, including considerations of sensory phenomena, motor coordination, emotion, drives, and the neurological basis of learning. (Brady, McIntire.)

**PSYCH. 181. ANIMAL BEHAVIOR. (3)**

Second semester. Prerequisite, consent of instructor. A study of animal behavior, including considerations of social interactions, learning, sensory processes, motivation, and experimental methods, with a major emphasis on mammals. (McIntire.)

**PSYCH. 191. SENIOR SEMINAR. (3)**

First semester. Prerequisites, senior standing and consent of the instructor. The historical and theoretical roots of the science of psychology. Analysis of current psychological theories and their related research. (Staff.)

**PSYCH. 194. INDEPENDENT STUDY IN PSYCHOLOGY. (1-6)**

First and second semesters. Prerequisites, senior standing and written consent of individual faculty supervisor. Integrated reading under direction leading to the preparation of an adequately documented report on a special topic. (Staff.)

**PSYCH. 195. MINOR PROBLEMS IN PSYCHOLOGY. (1-6)**

First and second semesters. Prerequisite, written consent of individual faculty supervisor. An individualized course designed to allow the student to pursue a specialized topic or research project under the supervision. (Staff.)

*For Graduates*

(All the following courses require consent of the instructor. Not all of the graduate courses are offered every year. The times specified for each course are given as estimates.)

**PSYCH. 200. PROSEMINAR: PROFESSIONAL ASPECTS OF PSYCHOLOGICAL SCIENCE. (1)**

Prerequisite, consent of faculty adviser. Survey of professional problems in psychology, including considerations of contemporary developments, professional ethics, literature resources, formulation of critical research problems, and discussion of the major institutions requiring psychological services. (Staff.)

**PSYCH. 201. SENSORY AND PERCEPTUAL PROCESSES. (3)**

Alternate years. Prerequisites, Psych. 180 and 211. The contemporary experimental and theoretical literature on selected problems in sensation and perception. (Andrews, Anderson, McIntire.)

**PSYCH. 203, 204. GRADUATE SEMINAR. (2, 2)**

Surveys of contemporary American and foreign research literature in specialized fields of psychology. (Staff.)

**PSYCH. 205, 206. HISTORICAL VIEWPOINTS AND CURRENT THEORIES IN PSYCHOLOGY. (3, 3)**

Alternate years. Prerequisite, Psych. 212. A study of the philosophical and scientific background of modern psychology, together with a review of its major systematic viewpoints and issues. (Staff.)

**PSYCH. 207. CONDITIONING AND LEARNING. (3)**

Alternate years. Prerequisite, Psych. 212. The literature on the experimental analysis of behavior, with examination of basic experiments and contemporary theories related to them. (Gollub, Yarczower, Turnage.)



## PSYCHOLOGY

### PSYCH. 208. VERBAL BEHAVIOR. (3)

Alternate years. Prerequisite, Psych. 123 and 212. Analysis of such topics as verbal learning, psycholinguistics, concept formation, and thinking. (Turnage.)

### PSYCH. 211, 212. ADVANCED GENERAL PSYCHOLOGY. (3, 3)

First and second semesters. Prerequisite, Psych. 145 or 146. A systematic review of the more fundamental investigations upon which modern psychology is based. (Staff.)

### PSYCH. 213. ADVANCED LABORATORY TECHNIQUES. (1-3)

Methodology of the automatization of research techniques and apparatus; apparatus design and construction; telemetric and digital techniques; logical block circuitry. Laboratory fee, \$5.00 per credit hour. (Staff.)

### PSYCH. 214. COMPARATIVE PSYCHOLOGY. (3)

Prerequisite, Psych. 181 and 212. The experimental literature on the behavior of infra-human organisms. Special topics. (Yarczower, McIntire.)

### PSYCH. 215. ADVANCED PSYCHOPHYSIOLOGY. (3)

Alternate years. An advanced seminar dealing with special selected topics in the area of psychophysiology. (Brady, McIntire.)

### PSYCH. 216. SEMINAR IN PSYCHOPHARMACOLOGY. (3)

Prerequisite, one year of graduate study in psychology and consent of the instructor. A critical review and detailed analysis of the literature and problems related to the effects of drugs on animal and human behavior. Designed for advanced graduate students in experimental psychology and clinical psychology. (Brady, Gollub.)

### PSYCH. 220. PSYCHOLOGICAL CONCEPTS IN MENTAL HEALTH. (3)

Each year. Prerequisite, advanced standing. Concepts in mental health, their theoretical status, experimental evidence, and current use. (Waldrop, Walder.)

### PSYCH. 221. SEMINAR IN COUNSELING PSYCHOLOGY. (3)

Selected problems in counseling psychology. (Waldrop, Magoon.)

### PSYCH. 222. SEMINAR IN CLINICAL PSYCHOLOGY. (3)

Selected problems in clinical psychology. (Pumroy, Daston, Walder.)

### PSYCH. 223. SEMINAR IN COMMUNITY MENTAL HEALTH. (3)

Selected problems in mental health psychology. (Staff.)

### PSYCH. 224. SEMINAR IN STUDENT PERSONNEL. (2)

(Same as *Ed. 228.*) Prerequisite, permission of instructor. The seminar is designed to acquaint the student with student personnel functions at the collegiate level. Attention is devoted to the historical antecedents of student personnel activities, the range of services, their functions, responsibilities, interrelationships and projected future status. Resource personnel presently engaged in student personnel services will participate as needed. (Byrne, Magoon.)

### PSYCH. 225, 226. MEASUREMENT AND EVALUATION. (4, 4)

First and second semesters. Prerequisite, Psych. 150. Theory and logic of the methodology of evaluation. Laboratory practice in methods of appraisal. Sur-



vey of available testing instruments and techniques. Laboratory fee of \$6.00 each semester. (Daston, Pumroy, Walder.)

**PSYCH. 229. SEMINAR IN INDUSTRIAL PSYCHOLOGY. (3)**

An advanced seminar covering specialized topics such as: morale and motivation, labor relations, consumer motivations, man-machine systems, quantitative and qualitative personnel requirements inventory, job evaluation, environmental conditions and safety, occupational choice and classification, and the interview. (Edgerton, Bartlett, Heermann.)

**PSYCH. 230. SEMINAR IN ENGINEERING PSYCHOLOGY. (3)**

Alternate years. An advanced seminar covering the analysis of factors, variables, and characteristics of systems which affect human performance and efficiency. (Anderson)

**PSYCH. 231. TRAINING PROCEDURES IN INDUSTRY. (3)**

Prerequisite, Psych. 148 or equivalent. A consideration of psychological principles and methods for improving job performance; skill development laboratory in application of methods and techniques is provided. (Edgerton, Bartlett, Heermann.)

**PSYCH. 232. PERSONNEL SELECTION AND JOB ANALYSIS. (3)**

Prerequisite, Psych. 161 or equivalent. Psychological measurement as applied to the analysis of job requirements and the development and use of performance criteria and predictors. (Edgerton, Bartlett, Heermann.)

**PSYCH. 233. SOCIAL ORGANIZATION IN INDUSTRY. (3)**

Prerequisite, permission of instructor. Analysis of management organizations as social structures, and the application of concepts and methods of social psychology to problems of conflict, cooperation, and leader-group relations. (Staff.)

**PSYCH. 240. INTERVIEW AND QUESTIONNAIRE TECHNIQUES. (3)**

Psychological concepts and methods in the use of interview, questionnaire, and inventory procedures for the measurement, prediction and alternation of behavior. (Staff.)

**PSYCH. 241. PERSUASION AND ATTITUDE CHANGE. (3)**

Each year. Consideration of the communication process and the various media of mass communication. Factors related to the effectiveness of communication and persuasion and analyzed in the light of experimental evidence, and various strategies and techniques of persuasion are reviewed. (McGinnies, Cline.)

**PSYCH. 242. SEMINAR IN SOCIAL PSYCHOLOGY. (3)**

Each year. Analysis and discussion of contemporary systematic positions in social psychology. Review of research methods in the area as well as theories and problems of current importance. (McGinnies, Cline.)

**PSYCH. 252, 253. ADVANCED STATISTICS. (3, 3)**

First and second semesters. Prerequisite, Psych. 90. Detailed study of the fundamentals of statistical inference, experimental design, and the analysis of regression and correlation concepts and techniques; a basic course for research students in the behavioral sciences. (Andrews, Anderson, Bartlett, Heermann.)

## PSYCHOLOGY

### PSYCH. 254. FACTOR ANALYSIS. (3)

Prerequisite, Psych. 253. Analysis of major developments in factor theory as applicable to the behavioral sciences, including computational methods and research implications. (Andrews.)

### PSYCH. 255. SEMINAR IN PSYCHOMETRIC THEORY. (3)

Prerequisite, Psych. 253. Study of psychophysical methods, scaling techniques, and the statistical methods of pattern analysis. (Staff.)

### PSYCH. 256. MENTAL TEST THEORY. (3)

Prerequisite, Psych. 253. Development of test theory from psychophysics and measurement theory. Consideration of formal and applied problems involved in developing and utilizing psychological tests and measurements. Special attention is given to problems of reliability, validity, and prediction. (Bartlett, Heermann.)

### PSYCH. 257. SEMINAR IN QUANTITATIVE PSYCHOLOGY. (3)

Prerequisite, Psych. 253. An advanced seminar covering special topics in statistical and mathematical methods and models in psychology. (Staff.)

### PSYCH. 258. DEVELOPMENT OF PREDICTORS. (3)

Prerequisite, Psych. 253. Review of statistical theory and practices in the design, development and analysis of techniques of prediction in the behavioral sciences, with special attention to the formal and practical problems of criteria for prediction. (Andrews, Bartlett, Heermann.)

### PSYCH. 260. OCCUPATIONAL DEVELOPMENT AND CHOICE. (3)

Prerequisite, Psych. 220. Theoretical and research literature on occupational behavior. (Waldrop, Magoon.)

### PSYCH. 261, 262. MODIFICATION OF HUMAN BEHAVIOR: RESEARCH METHODS AND PRACTICES. (3, 3)

First and second semesters. The experimental and applied methods available for the induction of behavior change, with emphasis on their relationship to community mental health (first semester); process, outcome, and theory in their application to counseling and psychotherapy (second semester). (Daston, Walder.)

### PSYCH. 263, 264. MODIFICATION OF HUMAN BEHAVIOR: LABORATORY AND PRACTICUM. (3, 3)

First and second semesters. Application of methods relevant to behavior change in counseling and psychotherapy. Individual supervision and group consultation. Laboratory fee, \$6.00 per semester. (Staff.)

### PSYCH. 265. ADVANCED DEVELOPMENTAL PSYCHOLOGY. (3)

Empirical, experimental and theoretical literature related to developmental processes. (Waldrop, Pumroy.)

### PSYCH. 266. THEORIES OF MOTIVATION. (3)

Alternate years. Current treatments of motivational concepts, and analysis of the causal antecedents to behavior. (Staff.)

**PSYCH. 267. THEORIES OF PERSONALITY. (3)**

Scientific requirements for a personality theory. Postulates and relevant research literature for several current personality theories. (Daston, Walder.)

**PSYCH. 269. PRACTICUM IN COMMUNITY MENTAL HEALTH CONSULTATION. (3)**

Each year. Prerequisite, advanced standing. Directly supervised fieldwork in mental health consultation. (Staff.)

**PSYCH. 270. ADVANCED ABNORMAL PSYCHOLOGY. (3)**

Alternate years. Deviant behaviors and their etiology and taxonomy. (Daston, Walder.)

**PSYCH. 271. APPRAISAL OF DISABILITIES. (3)**

Human disabilities and their psychological appraisal. (Daston, Waldrop.)

**PSYCH. 272. INDIVIDUAL CLINICAL DIAGNOSIS. (3)**

Alternate years. Prerequisite, Psych. 226. Case study of emotionally disturbed individuals with a variety of psychological techniques. (Staff.)

**PSYCH. 274. EVALUATION AND CHANGE IN EDUCATIONAL SKILLS. (3)**

Methods for the enhancement of reading and other educational skills. (Staff.)

**PSYCH. 285, 286. RESEARCH METHODS IN PSYCHOLOGY. (1-3, 1-3)**

Each year. Research is conducted on several problems each semester, in a variety of fields of psychology, and under the supervision of various members of the faculty. (Staff.)

**PSYCH. 288, 289. SPECIAL RESEARCH PROBLEMS. (1-4, 1-4)**

First and second semesters. Supervised research on problems selected from the areas of experimental industrial, social, quantitative, or mental health psychology. (Staff.)

**PSYCH. 399. RESEARCH. (CREDIT ARRANGED)**

First and second semesters. (Staff.)

## SOCIOLOGY

*Professor and Head:* HOFFSOMMER.

*Professors:* JANES, LEJINS.

*Associate Professors:* ANDERSON, CUSSLER, HIRZEL, SHANKWEILER.

*Assistant Professors:* COATES, DI BELLA, FRANZ, HENKEL, MOTZ, AND WILLIAMS.

*Instructors:* BOURDEAU, COURTLESS, DOERR, GORDON (P.T.), KISTLER (P.T.), SAINT (P.T.), TOLAND AND WELLFORD.

Sociology 1 or its sociology equivalent is prerequisite to all other courses in sociology excepting Soc. 5.

## SOCIOLOGY

Sociology 1, 2, 183, 186 and 196 or their equivalents are required for an undergraduate major in sociology. Students interested in an Honors Program should check their eligibility with the Department.

### SOC. 1. INTRODUCTION TO SOCIOLOGY. (3)

First and second semesters. Summer session. This course is one of a group of four courses within Elective Group I of the American Civilization Program. It may also be taken by students who qualify by tests to select substitute courses in the program (provided the student has not taken the course as his Group I elective.) Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization. (Hirzel, Staff.)

### SOC. 2. PRINCIPLES OF SOCIOLOGY. (3)

First and second semesters. Prerequisites, Soc. 1 and sophomore standing. The basic forms of human association and interaction; social processes; institutions; culture, human nature and personality. (Cussler, Motz, Franz.)

### SOC. 5. ANTHROPOLOGY. (3)

First semester. This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. Introduction to anthropology; origins of man; development and transmission of culture; backgrounds of human institutions. (Anderson, Williams.)

### SOC. 13. RURAL SOCIOLOGY. (3)

First semester. Rural life in America; its people, social organization, culture patterns, and problems. (Hoffsommer, Hirzel, Henkel.)

### SOC. 14. URBAN SOCIOLOGY. (3)

Second semester. Urban growth and expansion; characteristics of city populations; urban institutional and personality patterns; relations of city and country. (Cussler.)

### SOC. 51. SOCIAL PATHOLOGY. (3)

First semester. Prerequisite, sophomore standing. Personal-social disorganization and maladjustment; physical and mental handicaps; economic inadequacies; programs of treatment and control. (Shankweiler, Franz.)

### SOC. 52. CRIMINOLOGY. (3)

Second semester. Prerequisite, sophomore standing. Criminal behavior and the methods of its study; causation; typologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime. (Lejins, Toland.)

### SOC. 62. SOCIAL INSTITUTIONS. (3)

Second semester. Prerequisite, sophomore standing. Nature and function of social institutions; the perpetuation of behavior through customs and social norms; typical contemporary American institutions. (Staff.)

### SOC. 64. COURTSHIP AND MARRIAGE. (3)

First and second semesters. Prerequisite, Soc. 1 and sophomore standing. A sociological study of courtship and marriage including consideration of physi-



ological and psychological factors. Inter-cultural companions and practical consideration. Designed for students in the lower division.

(Shankweiler, Motz, Bourdeau.)

**SOC. 71. DYNAMICS OF SOCIAL INTERACTION. (3)**

Prerequisite, Soc. 1 or equivalent. Social psychology of groups like committees, teams, clubs, sects, social movements, crowds and publics. Origin of the social self; role behavior, inter-group and intra-group relations. (Staff, Cussler.)

*For Advanced Undergraduates and Graduates*

Sociology 1 or its sociology equivalent and junior standing are prerequisite to courses numbered 100 to 199.

**SOC. 102. INTERCULTURAL SOCIOLOGY. (3)**

First semester. Prerequisite, Soc. 2. On the basis of a comparative study of customs, individual and group behavior patterns and institutions, this course studies the ideologies of America and other modern societies. (Staff.)

**SOC. 105. CULTURAL ANTHROPOLOGY. (3)**

Second semester. A survey of the simpler cultures of the world, with attention to historical processes and the application of anthropological theory to the modern situation. (Anderson, Williams.)

**SOC. 106. ARCHEOLOGY. (3)**

Second semester. A survey of human cultural developments as revealed by archeological methods, with materials to be drawn from selected areas of both Old and New Worlds. (Anderson.)

**SOC 111. SOCIOLOGY OF OCCUPATIONS AND CAREERS. (3)**

First semester. The sociology of work and occupational life in modern society. Changing occupational ideologies, values and choices. Occupational status systems and occupational mobility. The social psychology of career success. (Coates.)

**SOC. 112. RURAL-URBAN RELATIONS. (3)**

First semester. The ecology of population and the forces making for change in rural and urban life; migration, decentralization and the regionalism as methods of studying individual and national issues. Applied field problems. (Cussler.)

**SOC. 113. THE RURAL COMMUNITY. (3)**

Second semester. A detailed study of rural life with emphasis on levels of living, the family, school, and church and organizational activities in the fields of health, recreation, welfare, and planning. (Hoffsommer, Hirzel, Henkel.)

**SOC. 114. THE CITY. (3)**

First semester. The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control and planning. (Cussler.)

**SOC. 115. INDUSTRIAL SOCIOLOGY. (3)**

First and second semesters. The sociology of human relations in American industry and business. Complex industrial and business organization as social systems. Social relationship within and between industry, business, community, and society. (Coates.)

## SOCIOLOGY

### SOC. 116. MILITARY SOCIOLOGY. (3)

First and second semesters. Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military service as an occupation or profession. The sociology of military life. Relations between military institutions, civilian communities and society.

(Coates.)

### SOC. 118. COMMUNITY ORGANIZATION. (3)

First semester. Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects.

(DiBella.)

### SOC. 121. POPULATION. (3)

First semester. Population distribution and growth in the United States and the world; population characteristics of the United States; resulting population problems and policies.

(Hirzel.)

### SOC. 122. POPULATION. (3)

Second semester. Trends in fertility and mortality, migrations, population estimates and the resulting problems and policies.

(Hirzel.)

### SOC. 123. ETHNIC MINORITIES. (3)

First semester. Basic social processes in the relations of ethnic groups within the State; immigration groups and the Negro in the United States; ethnic minorities in Europe.

(Lejins.)

### SOC. 124. THE CULTURE OF THE AMERICAN INDIAN. (3)

Second semester. A study of type cultures; cultural processes; and the effects of acculturation on selected tribes of Indians in the Americas.

(Anderson, Williams.)

### SOC. 125. CULTURAL HISTORY OF THE NEGRO. (3)

First semester. The cultures of Africa south of the Sahara and the cultural adjustments of the Negro in North and South America.

(Anderson.)

### SOC. 131. INTRODUCTION TO SOCIAL SERVICE. (3)

First and second semesters. General survey of the field of social-welfare activities; historical development; growth, functions, and specialization of agencies and services, private and public.

(DiBella.)

### SOC. 136. SOCIOLOGY OF RELIGION. (3)

First semester. Varieties and sources of religious experience. Religious institutions and the role of religion in social life.

(Anderson.)

### SOC. 141. SOCIOLOGY OF PERSONALITY. (3)

First semester. Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior.

(Motz, Cussler.)

### SOC. 144. COLLECTIVE BEHAVIOR. (3)

Second semester. Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public.

(Cussler.)

**SOC. 145. SOCIAL CONTROL. (3)**

First semester. Forms, mechanisms, and techniques of group influence on human behavior; problems of social control in contemporary society. (Motz.)

**SOC. 147. SOCIOLOGY OF LAW. (3)**

First semester. Law as a form of social control; interrelation between legal and other conduct norms as to their content, sanctions, and methods of securing conformity; law as an integral part of the culture of the groups; factors and processes operative in the formation of legal norms as determinants of human behavior. (Lejins.)

**SOC. 153. JUVENILE DELINQUENCY. (3)**

First semester. Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention. (Lejins, Courtless.)

**SOC. 154. CRIME AND DELINQUENCY PREVENTION. (3)**

Second semester. Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. Methods and programs in prevention of crime and delinquency. (Lejins.)

**SOC. 156. INSTITUTIONAL TREATMENT OF CRIMINALS AND DELINQUENTS. (3)**

First semester. Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. History, organization and functions of penal and correctional institutions for adults and juveniles. (Lejins.)

**SOC. 161. THE SOCIOLOGY OF WAR. (3)**

Second semester. The origin and development of armed forces as institutions; the social causes, operations and results of war as social conflict; the relations of peace and war and revolution in contemporary civilization. (Coates.)

**SOC. 164. THE FAMILY AND SOCIETY. (3)**

First and second semesters. Prerequisite, Soc. 1 or equivalent. Study of the family as a social institution; its biological and cultural foundations, historic development, changing structure and function; the interactions of marriages and parenthood, disorganizing and reorganizing factors in present day trends. (Shankweiler, Bourdeau, Motz.)

**SOC. 166. INTERVIEWING AND PROBLEM SOLVING IN SOCIAL WORK. (3)**

Prerequisite, Soc. 131. (may be taken concurrently). The principles of interviewing and other diagnostic techniques as applied to social problems with particular reference to family and child behavior. (DiBella.)

**SOC. 171. FAMILY AND CHILD WELFARE. (3)**

First semester. Programs of family and child welfare agencies; social services to families and children; child placement; foster families. (DiBella.)

**SOC. 173. SOCIAL SECURITY. (3)**

First semester. The social security program in the United States; public assistance; social insurance. (DiBella.)

## SOCIOLOGY

### SOC. 174. PUBLIC WELFARE. (3)

Second semester. Development and organization of the public welfare movement in the United States; social legislation interrelations of federal, state, and local agencies and institutions. (DiBella.)

### SOC. 180. SMALL GROUP ANALYSIS. (3)

Analysis of small group structure and dynamics. Review of research on small groups in factories, military service, schools and communities. Presentation of techniques used in the study of small groups. (Franz.)

### SOC. 183. SOCIAL STATISTICS. (3)

First and second semesters. Prerequisite, Math. 3 or 10. Measures of central tendency and dispersion, use of statistical inference in simple testing of null hypotheses, chi square, and labor saving computational devices for correlation. Majors in sociology should take this course in their junior year. (Henkel.)

### SOC. 185. ADVANCED SOCIAL STATISTICS. (3)

Second semester. Prerequisite, Soc. 183, or equivalent. Provides refined statistical research methods for advanced students in the social sciences. Sampling theory, specialized correlation technique, advanced tests of significance, and other procedures. (Henkel.)

### SOC. 186. SOCIOLOGICAL THEORY. (3)

First and second semesters. Development of the science of sociology; historical backgrounds; recent theories of society. Majors in sociology should take this course in their senior year. (Janes, Motz, Hirzel.)

### SOC. 191. SOCIAL FIELD TRAINING. (1-3)

First and second semesters. Prerequisites, for social work field training, Soc. 131; for crime control field training, Soc. 52 and 153. Enrollment restricted to available placements. Supervised field training in public and private social agencies. The student will select his particular area of interest and be responsible to an agency for a definite program of in-service training. Group meetings, individual conferences, and written program reports will be a required part of the course. (Staff.)

### SOC. 196. SENIOR SEMINAR. (3)

First and second semesters. Required of and open only to senior majors in sociology. Scope, fields, and research methods of sociology; practical applications of sociological knowledge. Individual study and reports. Sociology majors who expect to graduate in mid-year should take this course in the preceding spring semester. (Hoffsommer, Cussler.)

### *For Graduates*

With the exception of Soc. 201, 285, 290, and 291, individual courses numbered 200 to 299 will ordinarily be ordered in alternate years.

### SOC. 201. METHODS OF SOCIAL RESEARCH. (3)

First semester. Selection and formulation of research projects; methods and techniques of sociological investigation and analysis. Required of graduate majors in sociology. (Hoffsommer.)



**SOC. 215. COMMUNITY STUDIES. (3)**

First semester. Intensive study of the factors affecting community development and growth, social structure, social stratification, social mobility and social institutions; analysis of particular communities. (Staff.)

**SOC. 216. SOCIOLOGY OF OCCUPATIONS AND PROFESSIONS. (3)**

Second semester. An analysis of the occupational and professional structure of American society, with special emphasis on changing roles, functions, ideologies and community-relationships. (Coates.)

**SOC. 221. POPULATION AND SOCIETY. (3)**

Second semester. Selected problems in the field of population; quantitative and qualitative aspects; American and world problems. (Hirzel.)

**SOC. 224. RACE AND CULTURE. (3)**

Second semester. Race and culture in contemporary society; mobility and the social effects of race and culture contacts and intermixture. (Anderson.)

**SOC. 230. COMPARATIVE SOCIOLOGY. (3)**

Second semester. Comparison of the social institutions, organizations, patterns of collective behavior, and art manifestations of social values countries. (Staff.)

**SOC. 241. PERSONALITY AND SOCIAL STRUCTURE. (3)**

First semester. Comparative analysis of the development of human nature, personality, and social traits in select social structures. (Cussler.)

**SOC. 246. PUBLIC OPINION AND PROPAGANDA. (3)**

Second semester. Processes involved in the formation of mass attitudes; agencies and techniques of communication; quantitative measurement of public opinion. (Motz.)

**SOC. 253. ADVANCED CRIMINOLOGY. (3)**

First semester. Survey of the principal issues in contemporary criminological theory and research. (Lejins.)

**SOC. 254. SEMINAR: CRIMINOLOGY. (3)**

Second semester. Selected problems in criminology. (Lejins.)

**SOC. 255. SEMINAR. JUVENILE DELINQUENCY. (3)**

First semester. Selected problems in the field of juvenile delinquency. (Lejins.)

**SOC. 256. CRIME AND DELINQUENCY AS A COMMUNITY PROBLEM. (3)**

Second semester. An intensive study of selected problems in adult crime and juvenile delinquency in Maryland. (Lejins.)

**SOC. 257. SOCIAL CHANGE AND SOCIAL POLICY. (3)**

First semester. Emergence and development of social policy as related to social change; policy-making factors in social welfare and social legislation. (Staff.)

**SOC. 262. FAMILY STUDIES. (3)**

Second semester. Case studies of family situations; statistical studies of family trends, methods of investigation and analysis. (Shankweiler.)

## SOCIOLOGY

### SOC. 263. MARRIAGE AND FAMILY COUNSELING. (3)

Second semester. Prerequisites. Soc. 64 or Soc. 164 or consent of instructor. A sociological analysis of an emerging, family-centered profession. Designed for advanced sociology majors or allied fields for use in vocations such as teaching, medicine, the ministry and others embodying the role of guidance.

(Shankweiler.)

### SOC. 264. THE SOCIOLOGY OF MENTAL HEALTH. (3)

First semester. A study of the sociological factors that condition mental health together with an appraisal of the group dynamics of its preservation. (Staff.)

### SOC. 271. THEORY OF SOCIAL INTERACTION. (3)

Second semester. Positions of major sociologists and social psychologists as to how the individual interacts with various groups and the issues involved. Trends in recent interaction theory. (Cussler.)

### SOC. 282. SOCIOLOGY METHODOLOGY. (3)

Second semester. Logic and method of sociology in relation to the general theory of scientific method: principal issues and points of view. (Staff.)

### SOC. 285. SEMINAR: SOCIOLOGICAL THEORY. (3)

First semester. Critical and comparative study of contemporary European and American theories of society. Required of graduate majors in sociology.

(Janes, Motz.)

### SOC. 291. SPECIAL SOCIAL PROBLEMS. (Credit to be determined).

First and second semesters. Individual research on selected problems. (Staff.)

### SOC. 399. THESIS RESEARCH. (Credit to be determined)

First and second semesters.

(Thesis Adviser.)

# SPEECH AND DRAMATIC ART

*Professor and Head:* STRAUSBAUGH.

*Professor:* HENDRICKS.

*Associate Professors:* AYLWARD, BATKA, LINKOW, NIEMEYER, PUGLIESE, AND WEAVER.

*Associate Research Professor:* CAUSEY.

*Assistant Professors:* BAKER, CRAVEN, DOWNS, FRANK, PROVENSEN, SCHMITT, AND STARCHER.

*Instructors:* GOSSAGE, LAMB, MENSER, MEERSMAN, SHAFTEL, AND VIRDEN.

*Assistant Instructor:* CUSSLER.

*Lecturers:* CARTER, GOLDIAMOND, RESNICK, AND WILLIAMS.

## \*SPEECH 1. PUBLIC SPEAKING. (3)

First and second semesters. Prerequisite for advanced speech courses. Laboratory fee, \$1.00. The preparation and delivery of short original speeches; outside readings; reports, etc. It is recommended that this course be taken during the freshman year. (Linkow, Staff.)

## SPEECH 2. ADVANCED PUBLIC SPEAKING. (3)

A study of rhetorical principles and models of speech composition in conjunction with the preparation and presentation of specific forms of public address. (Downs.)

## SPEECH CLINIC. NO CREDIT.

Remedial work in minor speech defects. The work of the clinic is conducted in individual conferences and in small group meetings. Hours arranged by consultation with the respective speech instructor. (Staff.)

## SPEECH 3. FUNDAMENTALS OF GENERAL AMERICAN SPEECH. (3)

Each semester. Training in auditory discrimination of speech sounds, rhythms and inflections of general American speech. Analysis of the physiological bases of speech production and the phonetic elements of speech reception. This course is required of speech majors and recommended for foreign students and majors in nursery and elementary education. (Staff.)

## SPEECH 4. VOICE AND DICTION. (3)

First and second semesters. Emphasis upon the improvement of voice, articulation, and phonation. May be taken concurrently with Speech 1. (Starcher, Staff.)

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\* Speech 3 should be substituted as the requirement for non-English speaking students.

## SPEECH AND DRAMATIC ART

### \*SPEECH 7. PUBLIC SPEAKING. (2)

Each semester. Laboratory fee, \$1.00. The preparation and delivery of speeches on technical and general subjects. (Staff.)

### SPEECH 8. ACTING. (3)

First and second semesters. Prerequisite, consent of instructor. Basic principles of histrionic practice. (Meersman.)

### SPEECH 10. GROUP DISCUSSION. (2)

First and second semesters. A study of the principles, methods, and types of discussion, and their application in the discussion of contemporary problems. (Linkow, Staff.)

### SPEECH 11, 12. DEBATE. (2, 2)

First and second semesters. Pre-Law students may take Speech 11, 12, instead of Speech 1. A study of the principles of argument, analysis, evidence, reasoning, fallacies, briefing, and delivery, together with their application in public speaking. (Downs.)

### SPEECH 13. ORAL INTERPRETATION. (3)

First semester. The oral interpretation of literature and the practical training of students in the art of reading. (Provensen.)

### SPEECH 14. STAGECRAFT. (3)

First semester. Laboratory fee, \$2.00. Fundamentals of technical production. Emphasis on construction of scenery. (Gossage.)

### SPEECH 16. INTRODUCTION TO THE THEATRE. (3)

First and second semester. A general survey of the fields of the theatre. (Pugliese.)

### SPEECH 17. MAKE-UP. (2)

Second semester. One lecture and one laboratory period a week. Laboratory fee, \$2.00. A lecture-laboratory course in the theory and practice of stage make-up, covering basic requirements as to age, type, character, race, and period. (Schmitt.)

### SPEECH 22. INTRODUCTION TO RADIO AND TELEVISION. (3)

First and second semester. Prerequisite for all courses in radio. The development, scope, and influence of American broadcasting and telecasting, including visits to local radio and television stations, with guest lecturers from Radio Station WTOP and Television Station WTOP-TV. (Batka.)

### SPEECH 23. PARLIAMENTARY LAW. (1)

First and second semesters. A study of the principles and application of parliamentary law as applied to all types of meetings. Thorough training in the use of Robert's Rules of Order. (Strausbaugh.)

### *For Advanced Undergraduates and Graduates*

### SPEECH 102. RADIO PRODUCTION. (3)

Second semester. Prerequisites, Speech 22 and consent of instructor. Laboratory fee, \$2.00. A study of the multiple problems facing the producer. Special



## SPEECH AND DRAMATIC ART

emphasis is given to acoustic setup, casting, "miking," timing, cutting and the coordination of personnel factors involved in the production of radio programs. (Lamb.)

### SPEECH 105. HANDICAPPED SCHOOL CHILDREN. (3)

First and second semesters. Prerequisite, Speech 3 for undergraduates. The occurrence, identification and treatment of speech handicaps in the classrooms. An introduction to speech pathology. (Craven.)

### SPEECH 106. CLINICAL PRACTICE. (1 to 5 Credits, up to 9)

Each semester. Summer session. Prerequisite, Speech 105. May be taken for 1-5 credit hours per semester. May be repeated for a total of 9 semester hours credit. Laboratory fee, \$1.00 per hour. Clinical practice in various methods of corrective procedures with various types of speech cases in the University clinic, Veterans hospitals, and public schools. (Craven.)

### SPEECH 107. ADVANCED ORAL INTERPRETATION. (3)

Second semester. Prerequisite, Speech 13. Emphasis upon the longer reading. Program planning. (Provensen.)

### SPEECH 109. SPEECH AND LANGUAGE DEVELOPMENT OF CHILDREN. (3)

Second semester. Admission by consent of instructor. An analysis of normal and abnormal processes of speech and language development in children. (Hendricks.)

### SPEECH 110. ADVANCED GROUP DISCUSSION. (3)

First and second semesters. Prerequisite, Speech 10. Required in speech curriculum and elective in other curricula. An examination of current research and techniques in the discussion and conference including extensive practice in this area. (Linkow.)

### SPEECH 111. SEMINAR. (3)

First and second semesters. Prerequisites, senior standing and consent of instructor. Present-day speech research. (Strausbaugh, Staff.)

### SPEECH 112. PHONETICS. (3)

First semester. Prerequisite, Speech 3 or consent of instructor. Laboratory fee, \$3.00. Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice transcription. Mastery of the international phonetic alphabet. (Kavanagh.)

### SPEECH 113. PLAY PRODUCTION. (3)

Second semester. Prerequisite, Speech 16 or consent of instructor. Development of procedure followed by the director in preparing plays for public performance. (Pugliese.)

### SPEECH 114. THE FILM AS AN ART FORM. (3)

Laboratory fee, \$10.00. A study of the motion picture as a developing form of entertainment, communication, and artistic expression. A series of significant American and foreign films are viewed to illustrate the artistic, historical and sociological trends of the twentieth century. (Niemeyer.)

### SPEECH 115. RADIO AND TELEVISION IN RETAILING. (3)

First semester. Limited to students in the College of Home Economics. Prerequisite, Speech 1 or 7. Laboratory fee, \$2.00. Writing and production of

## **SPEECH AND DRAMATIC ART**

promotional programs for the merchandising of wearing apparel and home-furnishings. Collaboration with the Washington and Baltimore radio stations and retail stores. (Lamb.)

### **SPEECH 116. RADIO AND TELEVISION ANNOUNCING. (3)**

Second semester. Prerequisites, Speech 4 and 22 or consent of instructor. Laboratory fee, \$2.00. The theory and application of all types of announcing. (Batka.)

### **SPEECH 117. RADIO AND TELEVISION CONTINUITY WRITING. (3)**

First semester. Prerequisite, Speech 22 or consent of instructor. A study of the principles, methods and limitations of writing for radio and television. Application will be made in the writing of general types of continuities and commercials. (Lamb.)

### **SPEECH 120. SPEECH PATHOLOGY. (3)**

First semester. Prerequisite, Speech 105. Laboratory fee, \$3.00. A continuation of Speech 105, with emphasis on the causes and treatment of organic speech disorders. (Craven.)

### **SPEECH 124, 125. AMERICAN PUBLIC ADDRESS. (3, 3)**

First and second semesters. Prerequisite, Speech 1 or 7. The first semester covers the period from colonial times to the Civil War period. The second semester covers from the Civil War period through the contemporary period. (Staff.)

### **SPEECH 126. SEMANTIC ASPECTS OF SPEECH IN HUMAN RELATIONS. (3)**

Second semester. Prerequisite, one course in public speaking. An analysis of speech and language habits from the standpoint of general semantics. (Hendricks.)

### **SPEECH 127. CHILDREN'S DRAMATICS. (3)**

Principles and methods necessary for staging children's productions on the elementary school level. Major emphasis on creative dramatics; the application of creative dramatics in the school room, and the values gained by the child in this activity. Students will conduct classes in formal and creative dramatics which will culminate in children's programs. (Pugliese.)

### **SPEECH 129, 130. PLAY DIRECTING. (3, 3)**

Prerequisite, Speech 8 or consent of instructor. A lecture-laboratory course dealing with the fundamentals of script cutting, pacing, movement, blocking, and rehearsal routine as applied to the directing of plays. (Pugliese.)

### **SPEECH 131. HISTORY OF THE THEATRE. (3)**

First semester. A survey of the dramatic production from early origin to 1800. (Niemeyer.)

### **SPEECH 132. HISTORY OF THE THEATRE. (3)**

Second semester. A survey of dramatic production from 1800 to the present. (Niemeyer.)

### **SPEECH 133. COMMUNICATION PROCESSES IN CONFERENCES. (3)**

Second semester. Prerequisites, Speech 103 or 104 or the equivalent. Limited to students at the off-campus centers. Group participation in conferences, methods

## SPEECH AND DRAMATIC ART

of problem solving, semantic aspects of language and the function of conferences in industry and government. (Linkow.)

### **SPEECH 135. INSTRUMENTATION IN SPEECH AND HEARING SCIENCE. (2)**

First semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. The use of electronic equipment in the measurement of speech and hearing. (Linkow.)

### **SPEECH 136. PRINCIPLES IN SPEECH THERAPY. (3)**

Prerequisite, Speech 120. Laboratory fee, \$3.00. Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. (Hendricks.)

### **SPEECH 138. METHODS AND MATERIALS IN SPEECH CORRECTION. (3)**

Prerequisite, Speech 120 or the equivalent. Laboratory fee, \$3.00. The design and use of methods and materials for diagnosis, measurement, and retraining of the speech-handicapped. (Craven.)

### **SPEECH 139. THEATRE WORKSHOP. (3)**

Given each semester. Prerequisite, Speech 8 or 14. A laboratory course designed to provide the student with practical experience in all phases of theatre production. (Strausbaugh.)

### **SPEECH 140. PRINCIPLES OF TELEVISION PRODUCTION. (3)**

First semester. Prerequisite, Speech 22. Laboratory fee, \$5.00. A study of the theory, methods, techniques, and problems of television production and direction. Units of study covering television cameras and lenses, lighting theory and practices, scenery and properties, costumes and makeup, graphic arts and special effects are included. Observation of production procedures at nearby television stations. Application will be made through crew assignments for University-produced television programs. (Aylward.)

### **SPEECH 141. INTRODUCTION TO AUDIOMETRY. (2)**

First semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. Analysis of various methods and procedures in evaluating hearing losses. Required for students whose concentration is in speech and hearing therapy. (Causey.)

### **SPEECH 142. SPEECH READING AND AUDITORY TRAINING. (2)**

Second semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. Methods of training individuals with hearing loss to recognize, interpret and understand spoken language. Required for students whose concentration is in speech and hearing therapy. (Causey.)

### **SPEECH 146. TELEVISION NEWS AND PUBLIC AFFAIRS. (3)**

Second semester. Prerequisite, Speech 117 or Journalism 101. Training in presentation of television news, interviews, discussions, and forums. (Batka.)

### **SPEECH 147. ANALYSIS OF BROADCASTING PROCESSES AND RESULTS. (2)**

First semester. Prerequisite, Speech 22 or consent of instructor. Survey of the more common analytic approaches, methods, and results in the field of radio and television. (Aylward.)

### **SPEECH 148. TELEVISION DIRECTION. (3)**

First semester. Two hour lecture, three hour laboratory. Prerequisites, Speech 22, 140. Laboratory fee, \$10.00. Principles of television direction including analysis of script, casting, rehearsing, production, and video control. (Aylward.)



## SPEECH AND DRAMATIC ART

### SPEECH 149. TELEVISION WORKSHOP. (3)

Second semester. Two hour lecture, four hour laboratory. Prerequisites, Speech 22, 140 and 148, or consent of instructor. Laboratory fee, \$10.00. (Aylward.)

### SPEECH 150. RADIO AND TELEVISION STATION MANAGEMENT. (2)

Second semester. Prerequisite, Speech 22 or consent of instructor. Broadcasting regulations, licenses, personnel functions, sales, advertising, and program and station promotion. (Batka.)

### SPEECH 161. ANCIENT RHETORIC. (3)

Second semester. Prerequisite, Speech 5 or 11. The theories of speechmaking and speech composition as propounded by the classical rhetoricians. Special attention is given to Plato, Aristotle, Socrates, Cicero, Quintillian and St. Augustine. (Downs.)

### SPEECH 164. PERSUASION IN SPEECH. (3)

Second semester. Prerequisite, Speech 5 or 11. A study of the bases of persuasion with emphasis on recent experimental developments in persuasion. (Weaver.)

### SPEECH 171. STYLES AND THEORIES OF ACTING. (3)

Second semester. Prerequisite, Speech 8 or consent of instructor. The study and application of historical styles and theories of acting. (Pugliese.)

### SPEECH 175. STAGE DESIGN AND LIGHTING. (3)

Second semester. Prerequisite, Speech 14 or consent of instructor. The theory of stage design and lighting. Making of plans and lighting plots as coordinate elements of scenic art. (Schmitt.)

### SPEECH 180. HONORS SEMINAR. (3)

For Honors students only. Readings, symposiums, visiting lecturers, discussions. (Staff.)

### *For Graduates*

The Department maintains a reciprocal agreement with Walter Reed General Hospital whereby clinical practice may be obtained at the Army Audiology and Speech Correction Center, Forest Glen, Maryland, under the direction of James P. Albrite, M.D., Director.

### SPEECH 201. SPECIAL PROBLEMS SEMINAR. (A. THROUGH K.), (1, 3)

(6 hrs. applicable toward M. A. degree.) Prerequisites, 6 hours in speech pathology and consent of instructor. A. Stuttering; B. Cleft Palate; C. Delayed Speech; D. Articulation; E. Cerebral Palsy; F. Voice; G. Special Problems of the Deaf; H. Foreign Dialect; I. Speech Intelligibility; J. Neurophysiology of Hearing; K. Minor Research Problems. (Hendricks.)

### SPEECH 202. TECHNIQUES OF RESEARCH IN SPEECH AND HEARING. (3)

First semester. Prerequisite, 12 hours in speech pathology and audiology. Analysis of research methodology including experimental techniques, statistical analysis and preparation of reports for scientific investigations in speech and hearing science. Required of candidates for Master's degree in speech and hearing therapy. (Williams.)



## SPEECH AND DRAMATIC ART

### SPEECH 203. EXPERIMENTAL PHONETICS. (3)

Prerequisite, Speech 112. Laboratory fee, \$3.00. The application of experimental methods in quantitative analysis of the phonetic elements of speech.  
(Baker.)

### SPEECH 204. APPLIED PHONETICS. (3)

Prerequisite: Speech 112 or equivalent. Application of phonetic analysis to communication systems and clinical analysis in speech and hearing. (Baker.)

### SPEECH 205. DESCRIPTIVE PHONETICS. (3)

Prerequisite: Speech 112 or equivalent. Application of phonetic analysis in the transcription of dialects.  
(Baker.)

### SPEECH 206. DIAGNOSTIC PROCEDURES IN SPEECH PATHOLOGY. (3)

Prerequisite: 6 hours of speech pathology. A study of diagnostic tools and methods in the analysis of various types of speech disorders.  
(Hendricks, Staff.)

### SPEECH 207. ADVANCE PRINCIPLES OF SPEECH AND HEARING THERAPY. (3)

Prerequisite: Speech 136 or equivalent, and 6 hours of speech and hearing pathology. A review of learning principles as applied to the training of the speech and hearing handicapped.  
(Hendricks.)

### SPEECH 210. ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING. (3)

Prerequisite. 6 hours in speech pathology and audiology and consent of instructor. Laboratory fee, \$3.00. A study of anatomy and physiology of the auditory and speech mechanisms.  
(Staff.)

### SPEECH 211. A, B, C, D. ADVANCED CLINICAL PRACTICE. (1, 3 UP TO 12)

(6 hours applicable toward M.A. degree.) Prerequisite, 12 hours in speech pathology and audiology. Laboratory fee, \$1.00 per hour. Supervised training in the application of clinical methods in the diagnosis and treatment of speech and hearing disorders.  
(Craven.)

### SPEECH 212. ADVANCED SPEECH PATHOLOGY. (3)

Prerequisites, 6 hours in speech pathology and consent of instructor. Laboratory fee, \$3.00. Etiology and therapy for organic and functional speech disorders.  
(Kavanagh.)

### SPEECH 214. CLINICAL AUDIOMETRY. (3)

Prerequisites, 3 hours in audiology and consent of instructor. Laboratory fee, \$3.00. Testing of auditory acuity with pure tones and speech.  
(Resnick.)

### SPEECH 216. COMMUNICATION SKILLS FOR THE HARD-OF-HEARING. (3)

First semester. Prerequisites, 3 hours in audiology and consent of instructor. Speech reading, auditory training, and speech conservation problems in the rehabilitation of the hard-of-hearing.  
(Causey.)

### SPEECH 217. SELECTION OF PROSTHETIC APPLIANCES FOR THE ACOUSTICALLY HANDICAPPED. (3)

Prerequisite, Speech 214. Laboratory fee, \$3.00. A laboratory course in modern methods of utilizing electronic hearing aids.  
(Staff.)

## SPEECH AND DRAMATIC ART

### SPEECH 218. SPEECH AND HEARING IN MEDICAL REHABILITATION AND SPECIAL EDUCATION PROGRAMS. (3)

Second semester. Prerequisites, 6 hours in speech pathology and audiology and consent of instructor. Administrative problems involved in the organization and operation of speech and hearing therapy under the different types of programs. (Hendricks.)

### SPEECH 219. SPEECH DISORDERS OF THE BRAIN-INJURED. (3)

Prerequisites, 6 hours in speech pathology and audiology and consent of instructor. Laboratory fee, \$3.00. Methods of evaluation and treatment of children and adults who have suffered injury to brain tissue, with subsequent damage to speech and language processes. (Hendricks.)

### SPEECH 220. EXPERIMENTAL AUDIOLOGY. (3)

Second semester. Prerequisite, 6 hours in audiology. Laboratory fee, \$3.00. A study of experimental techniques in the investigation of problems in audiology and psychoacoustics. (Causey.)

### SPEECH 221. COMMUNICATION THEORY AND SPEECH HEARING PROBLEMS. (3)

Second semester. Prerequisite, 6 hours in speech pathology and audiology and consent of instructor. Analysis of current theories of communication as they apply to research and therapy in speech and hearing. (Hendricks.)

### SPEECH 222. ADVANCED BIO-ACOUSTICS. (3)

Prerequisite: 6 hours of audiology. Laboratory research methods in the study of hearing mechanisms in animals. (Spuehler.)

### SPEECH 223. ADVANCED PSYCHO-ACOUSTICS. (3)

Prerequisite: 6 hours of audiology. Research methodology in the study of human hearing. (Spuehler.)

### SPEECH 224. THE PREPARATION OF SPEECH AND HEARING SCIENTISTS IN INSTITUTIONS OF HIGHER LEARNING. (3)

Prerequisite; 6 hours of audiology and 6 hours of speech pathology. A review of problems involved in the training of personnel who expect to take teaching and research positions at university and college level. (Hendricks.)

### SPEECH 225. ADVANCED SEMANTICS. (3)

Prerequisite: 3 hours of semantics. Advanced study of the effects of language in human perception. (Hendricks.)

### SPEECH 226. LANGUAGE PROBLEMS OF THE EXCEPTIONAL CHILD. (3)

Prerequisite; 6 hours of speech pathology. A survey of special language problems of the mentally retarded, brain-injured, hard-of-hearing and deaf children. (Staff.)

### SPEECH 240. SEMINAR IN BROADCASTING. (3)

First semester. Studies of various aspects of broadcasting. (Aylward.)

## SPEECH AND DRAMATIC ART

### SPEECH 241. SPECIAL PROBLEMS IN BROADCASTING. (3)

Second semester. An experimental laboratory course for the development of new ideas in broadcasting. (Batka.)

### SPEECH 248. ADVANCED TELEVISION DIRECTION. (3)

Prerequisite: Speech 148 or consent of instructor. Principles of television direction as applied to dramatic programs, together with a consideration of the specific aesthetic values of the television medium. (Aylward.)

### SPEECH 260. SPEECH AND DRAMA PROGRAMS IN HIGHER EDUCATION. (3)

First semester. A study of current theories and practices in speech education. (Weaver, Staff.)

### SPEECH 261. INTRODUCTION TO GRADUATE STUDY IN SPEECH. (3)

First semester. (Weaver.)

### SPEECH 262. SPECIAL PROBLEMS IN GENERAL SPEECH. (3)

First semester. (Weaver.)

### SPEECH 263. RHETORICAL THEORIES OF STYLE. (3)

Prerequisites: Speech 124, 125, or 161, or consent of instructor. Examination of selected theories of style drawn from the fields of rhetoric and literature, and analysis of model speeches. (Staff.)

### SPEECH 264. INTERPERSONAL COMMUNICATION. (3)

Problems and processes of symbolic representation in speech, the effects of language on communication, semantic redundancy, and interaction between meaning and the structure of oral language. (Weaver.)

### SPEECH 270. SEMINAR: STUDIES IN THEATRE. (3)

First semester. Research projects adopted to individual backgrounds and special work. (Niemeyer.)

### SPEECH 271. THE THEORY OF PRE-MODERN DRAMATIC PRODUCTION. (3)

Second semester. An historical survey of production styles. (Pugliese.)

### SPEECH 272. SPECIAL PROBLEMS IN DRAMA. (3)

Second semester. The preparation of adaptations and other projects in dramaturgy. (Niemeyer.)

### SPEECH 273. THEORIES OF THE DRAMA. (3)

Advanced study of the identification and development of dramatic form from the early Greek drama to contemporary forms; the esthetics of theatre arts; and dramatic criticism. (Pugliese.)

### SPEECH 290. INDEPENDENT STUDY. (1-3)

Prerequisite: Consent of instructor. An individual course designed for intensive study or research of problems in any one of the three areas of: drama, general speech, or radio/tv. (Staff.)

### SPEECH 399. THESIS RESEARCH. (1-6)

Arranged. (Staff.)

## ZOOLOGY

## ZOOLOGY

*Professor and Head:* ANASTOS.

*Professor:* SCHOENBORN.

*Professor Emeritus:* BURHOE.

*Associate Professors:* BROWN, CRENSHAW, GROLLMAN, HALEY, HIGHTON, LINDER, RAMM, AND WINN.

*Assistant Professors:* BRINKLEY, FICKEN, GAINER, ROTHMAN, STROSS.

*Research Associates:* DOSS AND FICKEN.

*Instructors:* GRISMER, POTTER, STEWART, WIDMAN.

All zoology courses with laboratory have a laboratory fee of \$8.00 per course per semester.

### ZOOL 1. GENERAL ZOOLOGY. (4)

First and second semesters. Summer session. Three lectures and one two-hour laboratory period a week. Zool. 1 and 2 satisfy the freshman pre-medical requirement in general biology. An introduction to the modern concepts of biological principles and animal life. Emphasis will be placed upon the functional aspects of living systems with a survey of the physical and chemical bases of all life processes. (Linder and Brown.)

### ZOOL. 2. THE ANIMAL PHYLA. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 1 or Bot. 1. A study of the anatomy, classification and life histories of representative animals, invertebrates and vertebrates. (Rothman.)

### ZOOL. 5. COMPARATIVE VERTEBRATE MORPHOLOGY. (4)

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 1 and 2 or equivalent. A comparative study of selected organ systems in certain vertebrate groups. (Ficken.)

### ZOOL. 6. GENETICS. (4)

Second semester. Two lectures, one discussion period, and one two-hour laboratory period per week. Prerequisite, one course in zoology or botany. A consideration of the basic principles of heredity. (Crenshaw.)

### ZOOL. 14. HUMAN ANATOMY AND PHYSIOLOGY. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 1. For students who desire a general knowledge of human anatomy and physiology. (Grollman.)

### ZOOL. 15. HUMAN ANATOMY AND PHYSIOLOGY. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 14. A continuation of Zool. 14. (Grollman.)



**ZOOL. 55S. DEVELOPMENT OF THE HUMAN BODY. (2)**

Summer session. Five lectures a week. A study of the main factors affecting the growth and development of the child with special emphasis on normal development. (Staff.)

**ZOOL. 75. HISTORY OF ZOOLOGY. (1)**

First semester. One lecture a week. Prerequisites, a general Grade Point Average (GPA) of 3.2 and a GPA in biological subjects of 3.5 or permission of the instructor. A course in the history of the development of Zoology involving the historical figures, experiments and ideas which contributed to modern concepts. (Ramm.)

**ZOOL. 76. ZOOLOGICAL LITERATURE. (1)**

Second semester. One lecture a week. Prerequisites, a general Grade Point Average (GPA) of 3.2 and a GPA in biological subjects of 3.5, or permission of the instructor. Discussion of zoological literature, its use and significance. (Anastos.)

**ZOOL. 77. BASIC STUDY IN ZOOLOGY. (1-4)**

First and second semester. Prerequisites, a general Grade Point Average (GPA) of 3.2 and a GPA in biological subjects of 3.5 or permission of the instructor. Independent study, with supporting laboratory experiments, of the basic disciplines in zoology. Repeatable up to 8 hours credit. (Staff.)

**ZOOL. 101. COMPARATIVE PHYSIOLOGY. (4)**

Second semester. Three lectures and one three-hour laboratory period a week. Prerequisites, one year of zoology and one year of organic chemistry. The study of the differences and similarities in the functioning of organs of species of the animal kingdom. (Brinkley.)

**ZOOL. 102. GENERAL ANIMAL PHYSIOLOGY. (4)**

First semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisites, one year of zoology and one semester of organic chemistry. The general principles of physiological function as shown in mammals and lower animals. (Gainer.)

**ZOOL. 103. BIOPHYSICS. (3)**

Second semester, alternate years. (To be offered 1963-64). Three lectures a week. Prerequisites, one year of biology and one year of either physics or physical chemistry, or permission of the instructor. A course designed to acquaint the student with the scope of biophysics and to provide an introduction to the analysis of cells and tissues as physical-chemical systems. (Gainer.)

**ZOOL. 108. ANIMAL HISTOLOGY. (4)**

Second semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. A microscopic study of tissues and organs of vertebrates with special emphasis on the mammal. Practice in elementary histotechnique will be included. (Brown.)

**ZOOL. 109. ANIMAL CYTOLOGY. (4)**

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, two years of zoology and organic chemistry, or permission of

## ZOOLOGY

instructor. A study of cellular structure with particular reference to the morphology and physiology of cell organoids and inclusions. (Brown.)

### ZOOL. 110. GENERAL PARASITOLOGY. (4)

First semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisite, two years of zoology, and one year of chemistry or permission of the instructor. A consideration of the phenomenon of parasitism through a study of the structure, function and host relationships of parasitic organisms. (Haley.)

### ZOOL. 118. INVERTEBRATE ZOOLOGY. (4)

Second semester, alternate years. (To be offered 1963-64.) Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. An advanced course dealing with the taxonomy, morphology and embryology of the invertebrates, exclusive of insects. (Linder.)

### ZOOL. 120. VERTEBRATE EMBRYOLOGY. (4)

Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. Principles of developmental dynamics including organization, differentiation, morphogenesis, and developmental physiology. (Ramm.)

### ZOOL. 121. ANIMAL ECOLOGY. (3)

Second semester. Two lectures and one three-hour laboratory period a week. Prerequisite, one year of zoology. The environment and its control of animal abundance, organization of population, and the biology of communities will be studied. (Stross.)

### ZOOL. 127. ICHTHYOLOGY. (4)

Second semester, alternate years. (To be offered 1963-64.) Two lectures and one two-hour and one three-hour laboratory periods a week. Prerequisites, Zool. 1, 2 and 5 or equivalent. A course in anatomy, embryology, distribution, habits and taxonomy of marine and fresh water fish. (Winn.)

### ZOOL. 128. ZOOGEOGRAPHY. (3)

First semester. Three lecture periods a week. Prerequisites, Zool. 1, 2, and 5 or equivalent. Principles governing the geographical distribution of animals, with particular emphasis on vertebrates. (Highton.)

### ZOOL. 129. VERTEBRATE ZOOLOGY. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, two years of zoology or permission of instructor. The identification, classification, habits and behavior of vertebrates. (Winn.)

### ZOOL. 130. HYDROBIOLOGY. (4)

First semester, alternate years. (To be offered 1963-64.) Two lectures and two three-hour laboratory periods a week. Prerequisites, one year of biology or permission of instructor. Study of aquatic animals and conditions of existence in water. Selected examples are used to illustrate the influence of environment on productivity of aquatic communities. (Stross.)

### ZOOL. 150. SPECIAL PROBLEMS IN ZOOLOGY. (1 OR 2)

First and second semesters. Summer session. Prerequisites, major in zoology or biological sciences, a minimum of 3.0 cumulative average in the biological

sciences, and consent of instructor. Research or integrated reading in zoology. A student may register several times and receive up to 8 semester hours of credit. (Staff.)

## ZOOL. 151H. HONORS SEMINAR. (1)

First and second semesters. One discussion period a week. Prerequisite, participation in honors program. Guided discussion of topics of current interest. Repeatable to total of 4 hours credit. (Staff.)

## ZOOL. 152H. HONORS INDEPENDENT STUDY. (1-4)

First and second semesters. Prerequisites, participation in honors program. Study of classical material by way of guided independent study and laboratory experiments. Repeatable to a total of 12 hours credit. (Staff.)

## ZOOL. 153H. HONORS RESEARCH. (1-2)

First and second semesters. Prerequisite, participation in honors program. A laboratory research problem: required each semester during honors participation and culminating in an honors thesis. Repeatable to a total of 8 hours credit. (Staff.)

## ZOOL. 182. ETHOLOGY. (4)

Second semester, alternate years. (Not offered in 1963-64). Two lectures and two two-hour laboratory periods a week. Prerequisite, two years of Zoology including a course in comparative anatomy, or permission of instructor. The function, causation, and evolution of behavior. Laboratory analysis of the behavior of several species. (Ficken.)

## ZOOL. 190. EVOLUTION. (3)

First semester. Three lectures a week. Prerequisite, a course in genetics or permission of instructor. A consideration of current thought in regard to the origin and evolution of living organisms. (Crenshaw.)

## ZOOL. 203. ADVANCED EMBRYOLOGY. (4)

First semester, alternate years. (To be offered 1963-64). Two lectures and four hours of laboratory a week. Prerequisites, a course in embryology and one in physiology. The biochemical basis of development. (Ramm.)

## ZOOL. 204. CELLULAR PHYSIOLOGY. (4)

Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, a course in physiology and one year of organic chemistry. The principles of general and cellular physiology as found in animal life. (Schoenborn.)

## ZOOL. 205. COMPARATIVE ENDOCRINOLOGY. (3)

Second semester, alternate years. (Not offered 1963-64). Three lectures a week. Prerequisites, one year of organic chemistry and a course in physiology, or permission of the instructor. A systematic approach to the structure and physiology of neuro-endocrine systems of invertebrates and vertebrates. (Linder.)

## ZOOL. 206. ELECTROPHYSIOLOGY. (4)

Second semester, alternate years. (Not offered 1963-64). Two lectures and two three-hour laboratory periods a week. Prerequisites, a course in physiology, one

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year of physics, and permission of the instructor. A course concerned with electrical phenomena occurring in living matter and with the effect of electrical currents on cells, with special emphasis on nerves and muscles. (Gainer.)

### ZOOL. 207. ZOOLOGY SEMINAR. (CREDIT TO BE ARRANGED)

First and second semesters. Summer session. One lecture a week for each credit hour. 1. cytology; 2. embryology (general embryology, experimental embryology, invertebrate embryology, transplantation and regeneration, endocrines and development); 3. fisheries; 4. genetics (population genetics); 5. parasitology (general parasitology, helminthology, fish diseases); 6. physiology (physiology of protozoa, invertebrate physiology, physiology of fishes, physiology of development); 7. systematics (evolution, herpetology, ichthyology, zoogeography); 8. ecology (experimental ecology, marine ecology, radioisotopes in ecology, population dynamics, limnology); 9. behavior (comparative behavior, fish behavior, electronic instrumentation); 10. recent advances (microtechnique and histochemistry, Russian biology). (Staff.)

### ZOOL. 208. SPECIAL PROBLEMS IN ZOOLOGY. (CREDIT TO BE ARRANGED)

First and second semester, summer session. 1. cytology; 2. embryology; 3. fisheries; 4. genetics; 5. parasitology; 6. physiology; 7. systematics; 8. ecology; 9. behavior and 10. general. (Staff.)

### ZOOL. 210. SYSTEMATIC ZOOLOGY. (4)

Second semester. Three lectures and one three-hour laboratory period a week. The principles and methods involved in the classification of animals, with emphasis on population dynamics and speciation. Methods of evaluating taxonomic data, principles of zoological nomenclature, field and museum techniques, and the factors influencing the distribution of animals are also stressed. (Highton.)

### ZOOL. 211, 212. LECTURES IN ZOOLOGY. (1-3, 1-3)

First and second semesters. One to three lectures a week. Advanced lectures by outstanding authorities in their particular field of zoology. As the subject matter is continually changing, a student may register several times, receiving credit for several semesters. (Visiting Lecturers.)

### ZOOL. 216. PHYSIOLOGICAL CYTOLOGY. (4)

First semester, alternate years. (To be offered 1963-64). Two lectures and two three-hour laboratory periods a week. Prerequisites, one year of biochemistry and physics and a course in physiology, or permission of the instructor. A study of the structure and function of cells by chemical, physical and microscopic methods. (Brown.)

### ZOOL. 220. POPULATION GENETICS. (4)

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, a course in genetics. The role of mutation, selection, migration, inbreeding, and stochastic process in evolution. (Highton.)

### ZOOL. 223. ANALYSIS OF ANIMAL STRUCTURE. (4)

First semester, alternate years. (Not offered in 1963-64). Two lectures and four hours of laboratory a week. Prerequisites, a course in embryology. The experimental basis of developmental mechanics. (Ramm.)



**ZOOL. 234. EXPERIMENTAL MAMMALIAN PHYSIOLOGY. (4)**

First semester. Two four-hour laboratory periods a week. Prerequisites, a course in physiology and one year of chemistry above general chemistry. The theory, use and application to research of instrumentation normally found in the physiology laboratory with an introduction to surgical techniques on both large and small animals. (Grollman.)

**ZOOL. 235. COMPARATIVE BEHAVIOR. (4)**

Second semester, alternate years. (Not offered 1963-64). Two lectures and two three-hour laboratory periods a week. Prerequisites, usually a course in behavior and one in physiology, and permission of instructor. Orientation and migrations, communication, coding, brain and behavior, biological rhythms, and hormones and behavior are the main subjects that will be considered. (Winn.)

**ZOOL. 236. MAMMALIAN PHYSIOLOGY. (3)**

First semester, alternate years. (Not offered 1963-64). Three lectures a week. Prerequisite, a course in physiology. Advanced study of the functioning of the organs of mammalian species. (Brinkley.)

**ZOOL. 237. VERTEBRATE ENDOCRINOLOGY. (3)**

First semester, alternate years. (To be offered 1963-64). Three lectures a week. Prerequisite, a course in biochemistry. Study of the functioning of the endocrine glands of the vertebrate species. (Brinkley.)

**ZOOL. 240. ANALYSIS OF ANIMAL POPULATIONS. (4)**

First semester, alternate years. (Not offered in 1963-64). Two lectures and two three-hour laboratory periods a week. Prerequisite, a course in Ecology or permission of instructor. An advanced course in animal ecology with a focus on population. Studies of growth and regulation of animal populations are emphasized. (Stross.)

**ZOOL. 245. BIOLOGY OF BIRDS. (4)**

Second semester, alternate years. (To be offered 1963-64). Two lectures and two three-hour laboratory periods a week. Prerequisite, a course in vertebrate zoology or permission of instructor. Emphasis will be on ecology, behavior, anatomy, systematics, and reproductive physiology, plus field studies of local birds. (Ficken.)

**ZOOL. 250. ADVANCED PARASITOLOGY. (4)**

Second semester, alternate years. (Not offered 1963-64). One three-hour discussion period and one three-hour laboratory period a week. Prerequisites, a course in parasitology and permission of the instructor. A study of the interactions of hosts and parasites at the organismal and population levels, with emphasis on concepts of specificity, immunity, pathogenesis and epidemiology. (Haley.)

**ZOOL. 251. HELMINTHOLOGY. (4)**

Second semester, alternate years. (To be offered 1963-64). Two lectures and two three-hour laboratory periods a week. Prerequisites, two years of zoology and permission of the instructor. A study of the classification, structure and biology of the helminths. (Haley.)

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### ZOOL. 252. PROTOZOOLOGY. (4)

First semester, alternate years. (Not offered 1963-64). Two lectures and two three-hour laboratory periods a week. Prerequisites, one year of zoology and permission of the instructor. A study of the classification, structure and biology of the protozoa. (Rothman.)

### ZOOL. 253. PHYSIOLOGY OF SYMBIOSIS. (4)

First semester, alternate years. (To be offered 1963-64). Two lectures and two three-hour laboratory periods a week. Prerequisites, one year of biochemistry. and permission of instructor. A consideration of the biology of symbiotic organisms, especially the physiological concert existing between host and symbiont. (Rothman.)

### ZOOL. 260. QUANTITATIVE ZOOLOGY. (3)

First semester, alternate years. (Not offered 1963-64). Two lectures and one discussion period a week. Prerequisite, Math. 19 or equivalent, or permission of the instructor. A consideration of the statistical techniques of principal importance in the analysis of biological data. (Crenshaw.)

### ZOOL. 399. RESEACH. (CREDIT TO BE ARRANGED)

First and second semesters. Summer session. Work on thesis project only. 1. cytology; 2. embryology; 3. fisheries; 4. genetics; 5. parasitology; 6. physiology; 7. systematics; 8. ecology; 9. behavior; 10. invertebrate zoology.

# THE 1964-66 FACULTY

## *Administrative Officers*

MANNING, Charles, Dean of the College of Arts and Sciences and Professor of English

B.S., Tufts College, 1929; M.A., Harvard University, 1931; Ph.D., University of North Carolina, 1950.

SMITH, Leon P., Dean Emeritus

B.A., Emory University, 1919; M.A., University of Chicago, 1928; Ph.D., 1930.

## *Professors*

ALDEN, Douglas W., Professor and Head of Foreign Languages

A.B., Dartmouth College, 1933; A.M., Brown University, 1934; Ph.D., 1938.

ALDRIDGE, Alfred Owen, Professor of English

B.S., Indiana University, 1937; M.A., University of Georgia, 1938; Ph.D., Duke University, 1942; Docteur de l'Université de Paris, 1956.

ANASTOS, George, Professor and Head of Zoology

B.S., University of Akron, 1942; M.A., Harvard University, 1947; Ph.D., 1949.

ANDREWS, Thomas G., Professor and Head of Psychology

B.A., University of Southern California, 1937; M.A., University of Nebraska, 1939; Ph.D., 1941.

EVERY, William T., Professor and Head of Classical Languages and Literatures

B.A., Western Reserve University, 1934; M.A., 1935; Ph.D., 1937; Fellow of the American Academy in Rome, 1937-39.

BAILEY, William J., Research Professor of Chemistry

B. Chem., University of Minnesota, 1943; Ph.D., University of Illinois, 1946.

BAUER, Richard H., Professor of History

B.A., University of Chicago, 1924; M.A., 1928; Ph.D., 1935.

BODE, Carl, Professor of English

Ph.B., University of Chicago, 1933; M.A., Northwestern University, 1938; Ph.D., 1941; Fellow of the Royal Society of Literature of the United Kingdom.

BRACE, John W., Professor of Mathematics

B.A., Swarthmore College, 1949; M.A., Cornell University, 1951; Ph.D., 1953.

BRADY, Joseph V., Professor of Psychology (part-time)

B.S., Fordham University, 1943; Ph.D., University of Chicago, 1951.

BURGERS, Johannes M., Research Professor in Institute for Fluid Dynamics and Applied Mathematics

Doctor of Mathematics and Physics, University of Leiden, 1918; Doctor Honoris Causa, Université Libre de Bruxelles, 1948; Doctor Honoris Causa, Université de Poitiers, 1950; Doctor of Science in Technology, The Technion, 1955.

## FACULTY

**BURHOE, Sumner O.**, Professor Emeritus of Zoology

B.S., University of Massachusetts, 1925; M.S., Kansas State College, 1926; Ph.D., Harvard University, 1937.

**CHATELAIN, Verne E.**, Professor of History

B.A., Nebraska State Teachers College, 1917; M.A., University of Chicago, 1925; Ph.D., University of Minnesota, 1943.

**COHEN, Leon W.**, Professor and Head of Mathematics

A.B., Columbia University, 1923; A.M., 1925; Ph.D., University of Michigan, 1928.

**COOLEY, Franklin D.**, Professor of English

B.A., The Johns Hopkins University, 1927; M.A., University of Maryland, 1933; Ph.D., The Johns Hopkins University, 1940.

**DOETSCH, Raymond N.**, Professor of Microbiology

B.S., University of Illinois, 1942; M.S., Indiana University, 1943; Ph.D., University of Maryland, 1948.

**DOUGLIS, Avron**, Professor of Mathematics

A.B., University of Chicago, 1938; M.S., New York University, 1948; Ph.D., 1949.

**DRESDEN, Samuel**, Visiting Professor of Foreign Languages

Doctor. Exam., Philosophy, University of Amsterdam, 1938; Doctoral Exam. French, 1939.

**EDGERTON, Harold A.**, Professor of Psychology (part-time)

B.A., Kansas State Teachers College, 1924; Ph.D., Ohio State University, 1928.

**ESTABROOK, Gaylord**, Professor of Physics

B.S., Purdue University, 1921; M.S., Ohio State University, 1922; M.S., Johns Hopkins University, 1930; Ph.D., University of Pittsburgh, 1932.

**FABER, John E.**, Professor and Head of Microbiology

B.S., University of Maryland, 1926; M.S., 1927; Ph.D., 1937.

**FALLS, William F.**, Professor of Foreign Languages

B.A., University of North Carolina, 1922; M.A., Vanderbilt University, 1928; Ph.D., University of Pennsylvania, 1932.

**FERRELL, Richard A.**, Professor of Physics

B.S., California Institute of Technology, 1948; M.S., 1949; Ph.D., Princeton University, 1952.

**FRIEDMAN, Herbert L.**, Professor of Physics (part-time)

B.S., Brooklyn College, 1936; Ph.D., The Johns Hopkins University, 1940.

**GLASSER, Robert A.**, Professor of Physics (part-time)

B.S., University of Chicago, 1950; M.S., University of Chicago, 1952; Ph.D., University of Chicago, 1954.

**GOLDHABER, Jacob K.**, Professor of Mathematics

B.A., Brooklyn College, 1944; M.A., Harvard University, 1945; Ph.D., University of Wisconsin, 1950.



**GOOD, Richard A., Professor of Mathematics**

B.A., Ashland College, 1939; M.A., University of Wisconsin, 1940; Ph.D., 1945.

**GOODWYN, Frank, Professor of Foreign Languages**

B.A., Texas College of Arts and Industries, 1939; M.A., 1940; Ph.D., University of Texas, 1946.

**GORDON, Donald C., Professor of History**

B.A., College of William and Mary, 1934; M.A., Columbia Teachers College, 1938; Ph.D., Columbia University, 1947.

**GRANT, Colin King, Visiting Professor of Philosophy**

M.A. (Oxon.), 1946; D. Phil., 1950.

**GRENTZER, Rose Marie, Professor of Music**

B.A., Mus. Ed., Carnegie Institute of Technology, 1935; B.A., Mus., 1936; M.A., 1939.

**GRIEM, Hans, Professor of Physics**

Abitur, Max Planck Schule, Kiel, Germany, 1949; Ph.D., Universitat, Kiel, Germany, 1954.

**HANSEN, P. Arne, Professor of Microbiology**

B.Ph., University of Copenhagen, 1922; M.S., 1926; Ph.D., Cornell University, 1931.

**HARMAN, Susan E., Professor Emerita of English**

B.A., University of Nebraska, 1917; M.A., 1918; Ph.D., The Johns Hopkins University, 1926.

**HAYWARD, Raymond W., Professor of Physics (part-time)**

B.S., Iowa State University, 1943; Ph.D., University of California, 1950.

**HENDRICKS, Richard, Professor of Speech and Dramatic Art**

B.A., Franklin College, 1937; M.A., Ohio State University, 1939; Ph.D., 1956.

**HERZFELD, Charles, Professor of Physics (part time)**

B.Chem E., Catholic University, Washington, D. C., 1945; Ph.D., University of Chicago, 1951.

**HOFFSOMMER, Harold C., Professor and Head of Sociology**

B.A., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.

**HORNYAK, William F., Professor of Physics**

B.E.E., City College of New York, 1944; M.S., California Institute of Technology, 1945; Ph.D., 1949.

**HORVATH, John, Professor of Mathematics**

Ph.D., University of Budapest, 1947.

**HUMMEL, James A., Professor of Mathematics**

B.S., California Institute of Technology, 1949; M.A., Rice Institute, 1953; Ph.D., 1955.

**JACKSON, Stanley B., Professor of Mathematics**

B.A., Bates College, 1933; M.A., Harvard University, 1934; Ph.D., 1937.

## FACULTY

JANES, Robert W., Professor of Sociology

B.A., University of Chicago, 1938; M.A., University of Chicago, 1939; Ph.D., University of Illinois, 1942.

JONES, George F., Professor of Foreign Languages

A.B., Emory University, 1938; M.A., Oxford University, 1943; Ph.D., Columbia University, 1950.

KÄLLEN, Gunnar, Visiting Professor of Physics

B.A., Vasa Högre Allmänne Läroverk, Gothenburg, 1944; B.S., Chalmers Tekn. Högskola, Gothenburg, 1948; Fils. Kand., University of Lund, 1948; Fil. lic., University of Lund, 1949; Fil. Dir., University of Lund, 1950.

KOETHE, Gottfried, Visiting Professor of Mathematics

Ph.D., University of Graz, Austria, 1927.

KURODA, Sigekatu, Professor of Mathematics

B.S., University of Tokyo, 1928; Dr. Sci., University of Tokyo, 1945.

LAND, Aubrey C., Professor of History

B.Ed., Southern Illinois University, 1934; M.A., State University of Iowa, 1938; Ph.D., 1948.

LAVINE, Thelma Z., Professor of Philosophy

B.A., Radcliffe College, 1936; M.A., 1937; Ph.D., 1939.

LEHNER, Joseph, Professor of Mathematics

B.S., New York University, 1938; M.A., University of Pennsylvania, 1939; Ph.D., University of Pennsylvania, 1941.

LEJINS, Peter P., Professor of Sociology

Magister Philosophiae, University of Latvia, 1930; Magister Iuris, 1933; Ph.D., University of Chicago, 1938.

LEMBACH, John, Professor and Acting Head of Art

B.A., University of Chicago, 1934; M.A., Northwestern University, 1937; Ed.D., Columbia Teachers College, 1946.

LIPPINCOTT, Ellis R., Professor of Chemistry

B.A., Earlham College, 1943; M.S., The Johns Hopkins University, 1944; Ph.D., 1947.

MACDONALD, William M., Professor of Physics

B.A., University of Pittsburgh, 1950; Ph.D., Princeton University, 1955.

MAGOON, Thomas M., Professor of Psychology and Director of the University Counseling Center

B.A., Dartmouth University, 1947; M.A., University of Minnesota, 1951; Ph.D., 1954.

- MANNING, Charles**, Dean of the College and Professor of English  
B.S., Tufts College, 1929; M.A., Harvard University, 1931; Ph.D., University of North Carolina, 1950.
- MARION, Jerry B.**, Professor of Physics  
B.A., Reed College, 1952; M.S., Rice Institute, 1953; Ph.D., 1955.
- MARTIN, Monroe H.**, Professor of Mathematics  
B.S., Lebanon Valley College, 1928; Ph.D., The Johns Hopkins University, 1932.
- MASON, Edward A.**, Professor of Molecular Physics  
B.S., Virginia Polytechnic Institute, 1947; Ph.D., Massachusetts Institute of Technology, 1950.
- MAYOR, John R.**, Professor of Mathematics (part-time)  
B.S., Knox College, 1928; M.A., University of Illinois, 1929; Ph.D., University of Wisconsin, 1933.
- MCDONALD, F. B.**, Professor of Physics (part-time)  
B.S. Duke University, 1948; M.S., University of Minnesota, 1952; Ph.D., University of Minnesota, 1955.
- MCGINNIES, Elliott M.**, Professor of Psychology  
B.A., University of Buffalo, 1943; M.A., Brown University, 1944; Ph.D., Harvard University.
- McMANAWAY, James G.**, Professor of English  
B.A., University of Virginia, 1919; M.A., 1920; Ph.D., The Johns Hopkins University, 1931.
- MERRILL, Horace S.**, Professor of History  
B.E., River Falls State College, 1932; Ph.M., University of Wisconsin, 1933; Ph.D., 1942.
- MORGAN, Raymond**, Professor Emeritus of Physics  
B.S., Indiana University, 1916; M.S., 1917; Ph.D., University of Pennsylvania, 1922.
- MURPHY, Charles D.**, Professor and Head of English  
B.A., University of Wisconsin, 1929; M.A., Harvard University, 1930; Ph.D., Cornell University, 1940.
- MUSEN, Peter**, Professor of Astronomy (part-time)  
Mathematics, University of Belgrade, 1935; Ph.D., Astronomy, University of Belgrade, 1937.
- MYERS, Ralph D.**, Professor of Physics  
B.A., Cornell University, 1934; M.A., 1935; Ph.D., 1937.
- ÖPIK, Ernst**, Professor of Physics  
Moscow Imperial University, 1916; Ph.D., Tartu (Dorpat) University, 1923.
- PELCZAR, Michael J., Jr.**, Professor of Microbiology  
B.S., University of Maryland, 1936; M.S., 1938; Ph.D., State University of Iowa, 1941.

## FACULTY

PRAHL, A. J., Professor of Foreign Languages and Associate Dean of the Graduate School

M.A., Washington University, 1928; Ph.D., The Johns Hopkins University, 1933.

PRANGE, Gordon W., Professor of History

B.A., University of Iowa, 1932; M.A., 1934; Ph.D., 1937.

PRATT, Ernest F., Professor of Chemistry

B.A., University of Redlands, 1937; M.S., Oregon State College, 1939; Ph.D., University of Michigan, 1942.

QUYNN, William R., Professor of Foreign Languages

B.A., University of Virginia, 1922; M.A., 1923; Ph.D., The Johns Hopkins University, 1934.

RADO, George T., Professor of Physics (part-time)

S.B., Massachusetts Institute of Technology, 1939; S.M., 1941; Ph.D., 1943.

RAND, Marguerite C., Professor of Foreign Languages

B.A., Pomona College, 1919; M.A., Stanford University, 1921; Ph.D., University of Chicago, 1951.

REEVE, Wilkins, Professor of Chemistry

B.S., Drexel Institute of Technology, 1936; Ph.D., University of Wisconsin, 1940.

RICHESON, Allie W., Professor of Mathematics

B.S., University of Richmond, 1918; M.A., The Johns Hopkins University, 1925; Ph.D., 1928.

ROLLINSON, Carl L., Professor of Chemistry

B.S., University of Michigan, 1933; Ph.D., University of Illinois, 1939.

SALVADOR, Gregorio, Visiting Professor of Foreign Languages

Licenciado, University of Granada, 1950; Doctor, University of Madrid, 1953.

SCHAMP, Homer W., Jr., Professor of Molecular Physics

A.B., Miami University, 1944; M.S., University of Michigan, 1947; Ph.D., 1952.

SCHOENBORN, Henry W., Professor of Zoology

A.B., DePauw University, 1933; Ph.D., New York University, 1939.

SHAKESHAFT, John R., Visiting Professor of Astronomy

B.A., University of Cambridge, England, 1952; M.A., University of Cambridge, England, 1956; Ph.D., University of Cambridge, England, 1957.

SLAWSKY, Zaka I., Professor of Physics (part-time)

B.S., Rensselaer Polytechnic Institute, 1933; M.S., California Institute of Technology, 1935; Ph.D., University of Michigan, 1938.

SMITH, Leon P., Professor of Romance Languages

B.A., Emory University, 1919; M.A., University of Chicago, 1928; Ph.D., 1930.



## FACULTY

**SNOW, George A., Professor of Physics**

B.S., College of the City of New York, 1945; M.A., Princeton University, 1947; Ph.D., 1949.

**STELLMACHER, Karl L., Professor of Mathematics**

M.D., University of Gottingen, 1933; Ph.D., 1936.

**STRAUSBAUGH, Warren L., Professor and Head of Speech and Dramatic Art**

B.S., Wooster College, 1932; M.A., State University of Iowa, 1935.

**SVIRBELY, William J., Professor of Chemistry**

B.S., Carnegie Institute of Technology, 1931; M.S., 1932; D.Sc., 1935.

**TOLL, John S., Professor and Head of Physics**

B.S., Yale University, 1944; M.A., Princeton University, 1948; Ph.D., 1952.

**TRIMBLE, Lester, Professor of Music**

B.A., Carnegie Institute of Technology, 1947; M.F.A., 1948.

**ULRICH, Homer, Professor and Head of Music**

M.A., University of Chicago, 1939.

**VEITCH, Fletcher P., Professor of Chemistry**

B.S., University of Maryland, 1931; M.S., 1933; Ph.D., 1935.

**WALDROP, Robert S., Professor of Psychology**

B.A., University of Oklahoma, 1934; Ph.D., University of Michigan, 1948.

**WEBER, Joseph, Professor of Physics**

B.S., U. S. Naval Academy, 1940; Ph.D., The Catholic University of America, 1951.

**WELLBORN, Fred W., Professor of History**

B.A., Baker University, 1918; M.A., University of Kansas, 1923; Ph.D., University of Wisconsin, 1926.

**WESTERHOUT, Gert, Professor of Astronomy**

B.S., University of Leiden, 1950; M.S., 1954; Ph.D., 1958.

**WESKE, John R., Visiting Research Professor of Fluid Dynamics**

Dipl. Ing. Tech. Hochschule, 1923; M.S., Harvard, 1932; Sc.D., 1934.

**WHITE, Charles E., Professor and Head of Chemistry**

B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.

**WOODS, G. Forrest, Professor of Chemistry**

B.S., Northwestern University, 1934; B.A., 1935; M.S., Harvard University, 1937; Ph.D., 1940.

**ZEEVELD, W. Gordon, Professor of English**

B.A., University of Rochester, 1924; M.A., The Johns Hopkins University, 1929; Ph.D., 1936.

**ZUCKER, A. E., Professor Emeritus of Foreign Languages**

B.A., University of Illinois, 1912; M.A., 1913; Ph.D., University of Pennsylvania, 1917.

## FACULTY

### *Associate Professors*

ALLEY, Carroll O., Associate Professor of Physics

B.S., University of Richmond, 1948; M.A., Princeton University, 1951; Ph.D., 1962.

ALTER, Jean V., Associate Professor of Foreign Languages

Licence, Université de Bruxelles, 1948; Docteur de l'Université, Université de Paris, 1951; Ph.D., University of Chicago, 1958.

ANDERSON, Frank G., Associate Professor of Sociology

A.B., Cornell University, 1941; Ph.D., University of New Mexico, 1951.

ANDERSON, Nancy S., Associate Professor of Psychology

B.A., University of Colorado, 1952; M.A., Ohio State University, 1953; Ph.D., 1956.

ANDREWS, Mary L., Associate Professor of English

B.S., New York University, 1929; M.A., 1935; Ph.D., 1941.

AUSLANDER, Joseph, Associate Professor of Mathematics

B.S., Massachusetts Institute of Technology, 1952; M.A., University of Pennsylvania, 1953; Ph.D., University of Pennsylvania, 1957.

AYLWARD, Thomas J., Associate Professor of Speech and Dramatic Art.

B.S., University of Wisconsin, 1947; M.S., 1949; Ph.D., 1960.

BARNES, Jack C., Associate Professor of English

B.A., Duke University, 1939; M.A. 1947; Ph.D., University of Maryland, 1954.

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B.A., George Washington University, 1949; M.S., University of Wisconsin, 1950;  
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B.A., Stanford University, 1955; M.A., George Washington University, 1962.

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B.S., Purdue University, 1953; M.A., 1954; Ph.D., 1956.

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B.S., University of California, 1942; Ph.D., 1949.

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## NASA TRAINEES—ASTRONOMY AND ASTROPHYSICS

BINGHAM, James P.

B.S., Brooklyn Polytechnic Institute, 1962.

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B.S., California Institute of Technology, 1962.

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B.A., Villa Madonna College, 1957.

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B.S., California Institute of Technology, 1961.

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B.S., Massachusetts Institute of Technology, 1962.

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### *NASA Fellow*

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BROWN, Larry W., Physics

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B.S., Massachusetts Institute of Technology, 1961.

## FACULTY

CURRIE, Douglas G., Physics

B.S., Cornell University, 1958; M.S., University of Rochester, 1962; Ph.D., University of Rochester, 1963.

DANIELS, Walter E., Jr., Physics

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DOBSON, Peter N., Physics

B.S., Massachusetts Institute of Technology, 1960.

EINSCHLAG, Michael, Physics

B.S., Brooklyn Polytechnic Institute, 1962.

ELLIS, Yurdanur, Physics

B.S., University of Ankara, 1956; M.S., University of Ankara, 1958.

FINDLEY, David F., Mathematics

B.S., University of Cincinnati, 1962; M.A., University of Cincinnati, 1963.

FORBES, Kathy, Mathematics

B.S., University of Illinois, 1961; M.A., University of Maryland, 1964.

GOLDSTEIN, Dennis F., Mathematics

B.A., University of California, Los Angeles, 1962.

HERNANDEZ, Walter C., Jr., Physics

B.S., Louisiana State University, 1961.

HIRST, Lester L., Physics

B.S., California Institute of Technology, 1960.

HOOPER, Robert, Mathematics

B.A., The Johns Hopkins University, 1961.

HUNT, L.

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B.S., National Taiwan University of China, 1956; M.S., University of Maryland, 1962.

KAPLAN, Leonard M., Physics

B.S., University of Louisville, 1961.

KARDATZKE, Owen C., Physics

B.A., Anderson College, 1963.

KEATING, Richard E., Physics

B.S., Creighton University, 1963.

KERESZTESY, John, Chemistry

A.B., Middlebury College, 1958.

KIEHLMANN, Eberhard, Chemistry

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KIM, Suk Y., Physics

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KLEIN, Melvyn, Mathematics

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KOHR, Byron C., Physics

A.B., Franklin and Marshall College, 1961.

LOEBBAKA, David S., Physics

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LONGE, Pierre, Physics

B.S., Athénée de Chatelet (Belgium), 1951 (Baccalaureate); M.S., Université de Liège (Belgium), 1955 (Licence Physique); Ph.D., Université de Liège (Belgium), 1962 (Doctor of Physics).

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MC LAUGHLIN, P.,

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NEES, Monica R., Chemistry

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PALMER, David J., Mathematics

B.S., University of Notre Dame, 1961.

PITTMAN, Michael E., Physics

B.S., Loyola of New Orleans, 1961.

POOLE, John T., Mathematics

B.S., University of North Carolina, 1959; M.A., University of Maryland, 1962.

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B.S., University of Utah, 1958; M.S., 1961.

SAFRANEK, George L., Physics

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SHARP, Robert L., Mathematics

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SILVERMAN, Robert A., Chemistry

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SMIT, Gjalb R., Physics

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## FACULTY

SMITH, Richard, Physics  
B.A., Princeton University, 1962.

STANFORD, John L., Physics  
B.S., University of Texas, 1960.

TAYLOR, David K., Physics  
B.S., Ohio State University, 1959.

VERNON, John A., Chemistry  
B.S., Rutgers University, 1961.

WAGNER, Timothy, Physics  
B.S., University of Rochester, 1961.

YORK, Louise C., Physics  
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### *Research Assistants*

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B.S., Cornell University, 1962.

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B.S., Higher Teachers College, 1953.

ALLOUCHERIE, Yves J., Physics  
M.A., University of Toronto, 1960.

ANNIS, Brian, Physics  
B.S., Brown University, 1962.

BALL, Millicent J., Physics  
B.S., Antioch College, 1961.

BANDERMANN, Lothar W., Physics  
B.A., University of California, 1963.

BELL, George G., Physics  
B.S., Swarthmore College, 1960.

BETTINGER, Richard T., Physics  
B.S., Syracuse University, 1955.

BHATIA, Tarlochan S., Physics  
M.S., Delhi University, Allahabad, India, 1960.

BHATTACHRYA, Dwijendra L., Physics  
B.S., Presidency College, Calcutta, India, 1944; M.S., University College of Science and Technology, Calcutta, India, 1946.

BHATTACHARYA, Nikhilesh, Physics  
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- BURKE, Edward R., Physics  
B.S., St. Joseph's College, 1957.
- BURRIS, Richard W., Physics  
B.S., Yale University, 1960.
- CABLE, Peter G., Physics  
B.A., Haverford College, 1958.
- CHANG, Ren-Fang, Physics  
B.S., National Taiwan University, 1960.
- CHARLTON, Gordon, Physics  
M.S., West Virginia University, 1960.
- CHEN, Ronald T., Molecular Physics  
B.S., St. Vincent College, 1958.
- COHN, Ronald, Physics  
B.A., The Johns Hopkins University, 1960.
- CRONYN, Willard M., Astronomy  
B.S., University of Maryland, 1962.
- CULLEN, James Robert, Physics  
B.S., St. John's University, 1958.
- DAY, Donald K., Physics  
B.S., Massachusetts Institute of Technology, 1963.
- DE BOER, Peter, Physics  
IR, (W.I.) Technological University (Netherlands), 1955.
- DE SOUZA, Patrick, Physics  
B.S., McGill University, 1956; M.S., 1960.
- DOLINSKY, Adrian Antole, Physics  
B.S., Fordham University, 1958.
- DONOHUE, Michael T., Chemistry  
B.S., Holy Cross College, 1957.
- DORSKY, Albert M., Chemistry  
B.S., Pennsylvania State College, 1962.
- EBDON, David, Chemistry  
B.S., University of Michigan, 1961.
- EMMENEGGER, Elizabeth, Chemistry  
M.S., Institute of Technology, Zurich, 1958.
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B.S., University of Akron, 1959.
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B.Sc., Israel Institute of Technology, 1955; M.Sc., 1960.

FITZPATRICK, Brian, Chemistry

B.S., Fordham University, 1961.

FOSTER, Lee N., Physics

B.S., University of Massachusetts, 1960.

FRIDOVICH, Bernard, Physics

B.S., City College of New York, 1952.

GARLAND, Frank, Chemistry

B.S., Pennsylvania Military College, 1962.

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GLANVILLE, James O., Chemistry

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GLEASON, Jack, Physics

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HABERSTITCH, Albert, Physics

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HALL, Charles T., Microbiology

B.S., University of Maryland, 1954.

HAN, Kwang Sou, Physics

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HARRISON, Ernest A., Chemistry

B.A., Boston University, 1957.

HASTINGS, John R., Molecular Physics

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B.S., University of Maryland, 1961.



- HEATON, Henry T., Physics  
B.A., Colgate University, 1960.
- HINDS, George L., Physics  
B.A., Bowdoin College, 1955.
- HUANG, Phillip T., Physics  
B.S., Massachusetts Institute of Technology, 1961.
- HUANG, Rosalind, Physics  
B.S., University of Maryland, 1962.
- IYENGAR, R. Srinivas, Physics  
B.S., University of Mysore, 1949; M.S., (Math) Nagpur University, 1956; M.S., (Physics) University of Saskatchewan, 1961.
- KATO, Masao, Physics  
B.S., Tokyo College of Science, 1959.
- KATZIN, Joel C., Physics  
B.S., University of Maryland, 1960.
- KAUP, David J., Physics  
M.S., University of Oklahoma, 1962.
- KENNEY, Thomas E., Chemistry  
B.S., Fordham University, 1955; M.S., University of Maryland, 1962.
- KIM, Jung S., Mathematics  
B.S., Seoul University, 1949; M.A., University of Maryland, 1961.
- KOPP, Howard, Molecular Physics
- KUO, Chen Chi, Physics  
M.S., National Tsing Hua University, 1961.
- LATORRE, Aguilar V., Physics  
B.S., San Marcos University, Lima, Peru, 1957.
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B.S., Vordiplom, University of Kiel, Germany, 1957; M.S., University of Maryland, 1959.
- LINDSAY, James R., Chemistry  
B.A., Rutgers University, 1961.
- LIWSHITZ, Mordehai, Physics  
B.S., Technion ISR Institute of Technology, 1957.
- MAASS, Douglas H., Chemistry  
B.S., University of London, 1956; M.S., University of London, 1959.
- MACCARRONE, Agatino J., Chemistry  
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- MAITRA, Samaresh Ch., Physics  
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## FACULTY

- MANCHON, Dennis D., Physics  
B.S., University of Notre Dame, 1960.
- MANGOLD, Howard C., Physics  
B.S., Rockhurst College, 1959.
- MAZZELLA, Aldo T., Physics  
B.A., Pomona College, 1959.
- McALLISTER, Archie J., Physics  
B.A., Catholic University, 1954.
- McGRODDY, James C., Physics  
B.S., St. Joseph's College, 1958.
- MILLER, Myron H., Physics  
M.S., Clarkson College, 1960.
- MIYATAKE, Rosa, Chemistry  
B.S., Tokyo College of Science, 1960; M.S., St. Paul's University, 1963.
- MOAZED, Cyrus, Physics  
B.A., Harvard College, 1957.
- MURPHY, Peter W., Physics  
B.A., Princeton University, 1958.
- MYERS, Charles E., Chemistry  
B.S., Pennsylvania State University, 1962.
- OH, Sin Keun, Physics  
B.S., Seoul University, 1952.
- OUYANG, Binyork, Physics  
B.S., National Taiwan University, China, 1955.
- OUYANG, Rona C., Chemistry  
B.S., National Taiwan University, 1956.
- PAGNAMENTA, Antonio, Physics  
M.S., E.T.H., Switzerland, 1961.
- PAI, Myung Seung, Physics  
B.S., Seoul National University, 1958.
- PEARLSTEIN, Robert M., Physics  
B.A., Harvard University, 1960.
- POHLE, Richard H., Physics  
B.S., Brown University, 1961.
- PREM, Ravinder J., Physics  
B.A., Khassa College, 1954; B.Sc., P.U. College, India, 1957; M.S.C., 1958.
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RODOLAKIS, Anthony S., Physics

B.S., Dartmouth College, 1960.

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SABET, Abdou-Sabet, Chemistry

B.S., EinShams University, 1958.

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B.S., Northwestern University, 1960.

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SCHEINHAUS, Harold J., Physics

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SCHELZ, John P., Chemistry

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SERLEMITSOS, Aristides, Physics

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SHAKHASHIRI, Bassam Z., Chemistry

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B.A., University of Pennsylvania, 1959.

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SWEENEY, William E., Jr., Physics

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## FACULTY

- THOMPSON, Richard C., Chemistry  
B.S., University of Chicago, 1961.
- TSAI, Cheng Seng, Physics  
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- VASAVADA, K. V., Physics  
M.Sc., Delhi University, 1960.
- WALKER, Evan H., Physics  
B.S., University of Alabama, 1955; M.S., 1956.
- WALSTEAD, Maurice C., Physics  
M.S., University of Washington, 1960.
- WASSERMAN, Ruth A., Chemistry  
B.S., City College of New York, 1961.
- WILSON, Mark A., Physics  
B.S., Yale University, 1960.
- WOLSKY, Gilbert, Physics  
B.A., Brandeis University, 1959.
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B.A., Wabash College, 1961.
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## *Graduate Assistants*

- AHN, Byong H., Physics  
B.S., University of California, 1963.
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B.S., Lycie Pharcaubriand-Rome, 1958.
- ALLEN, William M., Chemistry  
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- ALUOTTO, Patrick F., Chemistry  
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- AMBRUS, Judith H., Chemistry  
Diploma Eotvus Lorand University for Sciences, Budapest, 1954.
- ANDERSON, J., Zoology  
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B.S., Bucknell University, 1961.
- ANGLE, P., Zoology  
B.S., Shippensburg State College, 1960.
- ANTIGONE, Harvey, Physics  
B.S., Brooklyn Polytechnic Institute, 1963.
- ARTABANE, T., Zoology  
B.S., University of Scranton, 1963.
- ATHERTON, R., Zoology  
B.S., University of Oklahoma, 1961; M.S., University of Wichita, 1963.
- ATWOOD, Allen W., English  
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- BAILEY, Margaret D., Chemistry  
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- BAKER, Stephen R., Chemistry  
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- BEAM, Charles F., Chemistry  
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- BEAVEN, M. Eric, Speech  
B.A., Columbia Union College, 1963.
- BELL, George G., Physics  
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## FACULTY

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- BORGOS, Ardele C., Foreign Languages  
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- BOSE, Romola, Physics  
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- CARTY, Frederick G., Mathematics  
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- CHENG, Lee-Po, Physics  
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- CHENG, Lorinda L., Chemistry  
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B.S., University of Maryland, 1956.
- CLEARFIELD, Martin O., Foreign Languages  
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- CLEMENTS, Gerald G.,  
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- CLEWELL, Lynne A., English  
B.A., Hiram College, 1962.
- CLUTE, William T., Sociology  
B.A., Hamline University, 1963.
- COLE, Francis E., Microbiology  
B.S., University of Maryland, 1960.
- COLNER, Ruth M., Speech  
B.A., Brooklyn College, 1940.
- COURT, Franklin E., English  
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- COX, Joseph W., History  
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B.A., University of Maryland, 1959.
- CRAWFORD, Mary M., English  
B.A., Western Maryland College, 1963.
- CREEDMAN, Theodore S., History  
B.A., University of Kentucky, 1954; M.A., Columbia, 1958.
- CRONYN, Lynne C., English  
B.A., Bucknell University, 1961.
- CROWSHAW, L., Zoology  
B.S., Bates College, 1962.
- DAHLGREN, Paul W., Physics  
B.S., College of Charleston, 1960.
- DANIELS, Carolyn K., English  
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## FACULTY

- DAVIDOFF, Edward F., Chemistry  
B.S., Rensselaer Polytechnic Institute, 1962.
- DEITEMEIER, Edward R., Jr., English  
B.A., University of Maryland, 1962.
- DIAMANT, Jay, Foreign Languages  
B.A., University of Maryland, 1964.
- DIPPOLD, Diane, English  
B.A., College of Notre Dame of Maryland, 1962.
- DOYLE, Timothy N., Speech  
B.A., Denison University, 1963.
- DRAPER, James R., English  
B.A., University of Rhode Island, 1961; M.A., Pennsylvania State University, 1962.
- DUBOW, Arnold, Physics  
M.A., Brandeis University, 1962.
- DUNINGER, Dennis, Mathematics  
B.A., Rutgers University, 1960.
- DUNKEL, Gregory M., Mathematics  
B.S., Boston College, 1962.
- EAMES, Ivan L., Sociology  
B.S., Howard University, 1963.
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B.A., University of Maryland, 1962.
- EARNHART, Hugh G., History  
B.A., Bowling Green State University, 1960.
- EDELSTEIN, Lester A., Physics  
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- EDMONDS, Barbara P., Foreign Languages  
Diplome Supérieur d'Etudes Françaises, Université de Strasbourg, 1954; B.A., University of Maryland, 1963.
- EGRY, Ivan J., Chemistry  
B.A., Adelphia College, 1960.
- ELFENBEIN, Lowell, Mathematics  
B.S., Brooklyn College, 1961; M.S., New York University, 1962.
- ELKIN, Richard M., Mathematics  
B.S., Columbia University (School of Engineering), 1963.
- EPSTEIN, Martin B.  
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- ERICKSON, Charles M., Chemistry  
B.S., Carnegie Institute of Technology, 1963.
- ESPELIE, M. Solveig, Mathematics  
B.A., Luther College, 1962.
- FELDESMAN, Gladys T., English  
B.A., George Washington University, 1934.
- FELDMANN, Hans E., English  
B.A., Hofstra College, 1961.
- ERENCE, Robert A., Chemistry  
B.S., Carnegie Institute of Technology, 1963.
- FINCHAM, Michael W., English  
B.A., University of Maryland, 1963.
- FINLAY, Thomas H., Chemistry  
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- FIORINDO, R., Zoology  
B.S., Albright College, 1958.
- FITZMAURICE, James E., English  
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- FLOWER, Annette C., English  
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- FOGT, Jerry Lee, Chemistry  
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- FONT, Marie T., Foreign Languages  
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B.A., University of Maryland, 1963.
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- FOX, Samuel L., Chemistry  
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- FRANTZ, Margaret, Mathematics  
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- FREIMAN, Richard, Mathematics  
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# UNIVERSITY CALENDAR, 1963-64

## *Fall Semester 1963*

September 16-20 Monday-Friday  
 September 23 Monday  
 November 27 Wednesday  
  
 December 1 Monday  
  
 December 20 Friday

Fall Semester Registration  
 Instruction Begins  
 Thanksgiving Recess Begins  
 After Last Class  
 Thanksgiving Recess Ends  
 8 a.m.  
 Christmas Recess Begins After  
 Last Class

## *1964*

January 6 Monday  
 January 22 Wednesday  
 January 23-30 Thursday-Wednesday  
 inclusive

Christmas Recess Ends 8 a.m.  
 Pre-Examination Study Day  
 Fall Semester Examinations

## *Spring Semester*

February 3-7 Monday-Friday  
 February 10 Monday  
 February 22 Saturday  
 March 25 Wednesday  
 March 26 Thursday  
  
 March 31 Tuesday  
 May 13 Wednesday  
 May 28 Thursday  
 May 29-June 5 Friday-Friday  
 May 30 Saturday  
 May 31 Sunday  
 June 6 Saturday

Spring Semester Registration  
 Instruction Begins  
 Washington's Birthday, Holiday  
 Maryland Day, not a holiday  
 Easter Recess Begins After Last  
 Class  
 Easter Recess Ends, 8 a.m.  
 AFROTC Day  
 Pre-Examination Study Day  
 Spring Semester Examinations  
 Memorial Day, Holiday  
 Baccalaureate Exercises  
 Commencement Exercises

## *Summer Session 1964*

June 22 Monday  
 June 23 Tuesday  
 July 4 Saturday  
 August 14 Friday

Summer Session Registration  
 Summer Session Begins  
 Independence Day, Holiday  
 Summer Session Ends

## *Short Courses 1964*

June 15-19 Monday-Saturday  
 August 3-7 Monday-Saturday  
 September 8-11 Tuesday-Friday

Rural Women's Short Course  
 4-H Club Week  
 Firemen's Short Course



# UNIVERSITY CALENDAR, 1964-65

(Tentative)

## *Fall Semester 1964*

September 14-18	Monday-Friday	Fall Semester Registration
September 21	Monday	Instruction Begins
November 25	Wednesday	Thanksgiving Recess Begins After Last Class
November 30	Monday	Thanksgiving Recess Ends 8 a.m.
December 22	Tuesday	Christmas Recess Begins After Last Class

## *1965*

January 4	Monday	Christmas Recess Ends 8 a.m.
January 20	Wednesday	Pre-Examination Study Day
January 21-27	Thursday-Wednesday	Fall Semester Examinations

## *Spring Semester*

February 2-5	Tuesday-Friday	Spring Semester Registration
February 8	Monday	Instruction Begins
February 22	Monday	Washington's Birthday, Holiday
March 25	Thursday	Maryland Day, not a Holiday
April 15	Thursday	Easter Recess Begins After Last Class
April 20	Tuesday	Easter Recess Ends 8 a.m.
May 12	Wednesday	AFROTC Day
May 27	Thursday	Pre-Examination Study Day
May 28-June 4	Friday-Friday	Spring Semester Examinations
May 30	Sunday	Baccalaureate Exercises
May 31	Monday	Memorial Day, Holiday
June 5	Saturday	Commencement Exercises

## *Summer Session*

June 21	Monday	Summer Session Registration
June 22	Tuesday	Summer Session Begins
July 5	Monday	Independence Day, Holiday
August 13	Friday	Summer Session Ends

## *Short Courses*

June 14-18	Monday-Friday	Rural Women's Short Course
August 2-6	Monday-Friday	4-H Club Week
September 7-10	Tuesday-Friday	Firemen's Short Course

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B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.

R. LEE HORNBAKE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; Ph.D., 1942.

FRANK L. BENTZ, JR., *Assistant to the President*

B.S., University of Maryland, 1942; Ph.D., 1952.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

## *Emeriti*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.Sc., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women Emerita*

B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

## *Administrative Officers of the Schools and Colleges*

EDWARD W. AITON, *Director, Agricultural Extension Service*

B.S., University of Minnesota, 1933; M.S., 1940; Ed.D., University of Maryland, 1956.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; Ph.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.

WILLIAM P. CUNNINGHAM, *Dean of the School of Law*

A.B., Harvard College, 1944; LL.B., Harvard Law School, 1948.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; Ph.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health.*

B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agriculture Experiment Station*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

VERL S. LEWIS, *Dean of the School of Social Work*

A.B., Huron College, 1933; M.A., University of Chicago, 1939; D.S.W., Western Reserve University, 1954.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; Ph.D., Pennsylvania State University, 1953.

CHARLES MANNING, *Acting Dean of the College of Arts and Sciences*

B.S., Tufts College, 1929; M.A., Harvard University, 1931; Ph.D., University of North Carolina, 1950.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; Ph.D., 1935.

DONALD W. O'CONNELL, *Dean of the College of Business and Public Administration*

B.A., Columbia University, 1937; M.A., 1938; Ph.D., 1953.

JOHN J. SALLEY, *Dean of the School of Dentistry*

D.D.S., Medical College of Virginia, 1947; Ph.D., University of Rochester School of Medicine and Dentistry, 1954.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D. (Hon.), University of Louisville, 1946.

### *General Administrative Officers*

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B.A., University of Maryland, 1930; M.S., 1931.

B. JAMES BORRESON, *Executive Dean for Student Life*

B.A., University of Minnesota, 1944.

C. WILBUR CISSEL, *Director of Finance and Business*

B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.



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B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; Ed.D., Teachers College, Columbia University, 1960.

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A.B., University of Maryland, 1930.

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A.B., Western Maryland College, 1938; M.S., University of Maryland, 1943; Ph.D., 1946.

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B.S., University of Iowa, 1936; M.D., 1926.

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B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.

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B.S., University of Maryland, 1943; C.P.A., 1948.

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B.A., University of Maryland, 1926; M.A., 1928.

ROBERT J. MCCARTNEY, *Director of University Relations*

B.A., University of Massachusetts, 1941.

GEORGE W. MORRISON, *Associate Director and Supervising Engineer, Physical Plant (Baltimore)*

B.S., University of Maryland, 1927; E.E., 1931.

VERNON H. REEVES, *Professor of Air Science and Head, Department of Air Science*

B.A., Arizona State College, 1936; M.A., Columbia University, 1949.

WERNER C. RHEINBOLDT, *Director, Computer Science Center*

Dipl. Math., University of Heidelberg, 1952; Dr. Rer. Nat., University of Freiburg, 1955.

HOWARD ROVELSTAD, *Director of Libraries*

B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.

CLODUS R. SMITH, *Director of the Summer Session*

B.S., Oklahoma State University, 1950; M.S., 1955; Ed.D., Cornell University, 1960.

GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant.*

B.S., University of Maryland, 1933.

### *Division Chairmen*

JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*

B.S., University of Maryland, 1926; M.S., 1927; Ph.D., 1937.

HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*

B.S., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.

CHARLES E. WHITE, *Chairman of the Lower Division*

B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.

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# THE COLLEGE

The University of Maryland is favorably located for the accommodation of students interested in business and public administration. Students interested in economics, political science, journalism and geography, other disciplines taught within the College, find similarly distinct advantage in being at College Park. Downtown Washington is only twenty-five minutes away in one direction, while the Baltimore business district is less than an hour in the other. There is frequent transportation service from College Park to each city. Qualified students may obtain a first-hand view of the far-flung economic and political activities of the national government, and they often find it desirable to utilize the libraries and other facilities available in Washington.

## ORGANIZATION

The College's six instructional departments offer a broad range of curricula in professional fields and in social science disciplines. The separate programs of study frequently draw upon courses in complementary fields within the College. The six departments and the major departmental offerings are:

- I. Department of Business Administration
  1. The General Curriculum in Business Administration
  2. Accounting
  3. Finance
  4. Insurance and Real Estate
  5. Marketing
  6. Personnel and Industrial Relations
  7. Production Management
  8. Statistics
  9. Transportation
  10. Combined Business Administration and Law
- II. Department of Economics
- III. Department of Geography
  1. General Curriculum in Geography
  2. Urban Geography
  3. Cartography
- IV. Department of Government and Politics
  1. General Curriculum in Government and Politics
  2. International Affairs
  3. Public Administration
- V. Department of Journalism and Public Relations
  1. Sequence in Journalism
  2. Sequence in Public Relations

## AMERICAN CIVILIZATION

- VI. Department of Office Management and Techniques
- VII. Bureau of Business and Economic Research
- VIII. Bureau of Governmental Research
- IX. Affiliated Governmental Organizations
  - 1. Maryland Municipal League
  - 2. State Association of County Commissioners of Maryland

## GENERAL INFORMATION

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all new undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

### COLLEGE LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

## THE PROGRAM IN AMERICAN CIVILIZATION

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American civiliza-

tion. This program is also designed to provide the student with a general educational background.

Work in American civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University and is described below. The second level is for undergraduate students wishing to carry a major in this field (see catalog for the College of Arts and Sciences). The third level is for students desiring to do graduate work in this field (see the Graduate School Announcements).

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American civilization are as follows:

1. English (12 hours, Eng. 1, 2 and 3, 4, American history (6 hours, H. 5, 6), and American government (3 hours, G. & P. 1) are required subjects; however, students who qualify in one, two or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours would remain an absolute requirement), 3 hours of American history (3 hours remaining as an absolute requirement), and 3 hours of American government. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take H. 41 instead of H. 5 and 6. Students who have been exempted from courses in English, history or American government may not take such courses for credit.

2. For the 3 additional hours of the 24 hours required, students elect one course from the following group. (Elective Group I):

Econ. 37—Fundamentals of Economics. (Not open to freshmen. Students who may wish to take additional courses in economics should substitute Econ. 31 for Econ. 37).

Phil. 1—Introduction to Philosophy

Soc. 1—Sociology of American Life

Psych. 1—Introduction to Psychology

(Students enrolled in the College of Business and Public Administration will normally meet this requirement by taking Econ. 31 in the sophomore year.)

3. Students who, on the basis of tests, have been released from 3, 6 or 9, hours in otherwise required courses in English, American history or American government (see 1 above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced

## GRADUATION REQUIREMENTS

courses in the same department as the required courses in which the student is excused; or (b) elective Group I (see 2 above), provided that the same course may not be used as both a Group I and a Group II choice, or (c) Elective Group II. Group II consists of the following 3-hour courses:

H. 41, 42, Western Civilization; either H. 51 or 52. The Humanities; either Mus. 20, Survey of Music Literature or Art 22, History of American Art and Soc. 5, Anthropology.

## ACADEMIC INFORMATION

### DEGREES

The University confers the following degrees on students completing programs of study in Departments of the College of Business and Public Administration: Bachelor of Science, Master of Business Administration, Master of Arts, and Doctor of Philosophy. Each candidate for a degree must file in the Office of the Registrar on a date announced for each semester a formal application for a degree. Candidates for degrees must attend a convocation at which degrees are conferred and diplomas are awarded. Degrees are conferred *in absentia* only in exceptional cases.

## GRADUATION REQUIREMENTS

A minimum of 120 semester hours of credit with an average of "C" in courses suggested by the College in addition to the specified courses in air science, physical activities and hygiene are required for graduation. A minimum of 57 hours of the required 120 hours must be in upper division courses, with the exception that the student may, with the consent of the Dean, offer certain lower division courses in mathematics, natural science, and foreign language in partial fulfillment of the requirement. Usually the departments within the College will require that the student have, in addition to an overall "C" average, an average of "C" or better in those courses comprising the student's major area of study. The time normally required to complete the requirements for the bachelor's degree is eight semesters.

### JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time of computation shall be included; courses carrying "O" credit shall not be included; courses with grade "F" shall be included; courses in Basic Air Science, the physical education required of all University students, and the health courses required of all women students shall not be included.



## GRADUATION REQUIREMENTS

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

### SENIOR RESIDENCE REQUIREMENT

After a student has earned acceptable credit to the extent of 90 semester hours exclusive of the required work in military science, physical activities, and hygiene, either at the University of Maryland or elsewhere, he must earn a subsequent total of at least 30 semester hours with an average grade of "C" or better at the University of Maryland. No part of these credits may be transferred from another institution. Specific requirements for graduation in the selected curriculum must be met.

### AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science for a period of two semesters. The successful completion of this sequence is a prerequisite for graduation and must be taken by all eligible students during the first two semesters of attendance at the University. Transfer students who do not have the required two semesters of air science will be required to complete the sequence or take it until graduation whichever occurs first.

Selected students who wish to do so may carry advanced air science courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning air science, refer to *University General and Academic Regulations*, a publication available to all entering undergraduate students.

### COSTS

Actual annual costs of attending the University include \$250.00 fixed charges; \$96.00 special fees; \$420.00 board; \$290.00 to \$320.00 lodging for Maryland residents, or \$340.00 to \$370.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students. A charge of \$400.00 is assessed to all students who are non-residents of the State of Maryland.

A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee.

*An Adventure in Learning*, the undergraduate bulletin of the University, contains a detailed statement of fees and expenses and includes changes in fees as they occur. A copy may be requested from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park.

## ADMISSION

## ADMISSION

### *Fall Semester*

All applications for full-time undergraduate admission for the Fall Semester at the College Park campus must be received by the University on or before July 15. Any student registering for seven (7) or more semester hours of work is considered a full-time student.

Under unusual circumstances, applications will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$15.00 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10.00 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission must be received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

### *Spring Semester*

The deadline for the receipt of applications for the Spring Semester is January 1.

### *University College*

The application deadlines and fees *do not* apply to students registering in the evening classes offered by the University College.

### *Graduate School*

Application for admission to the Graduate School must be made by September 1 for the fall term and by January 1 for the spring term on blanks obtained from the Office of the Graduate School. Admission to the summer session is governed by the date listed in the Summer School catalog. The summer session deadline date is generally June 1.

## ENTRANCE REQUIREMENTS

Requirements for admission to the College are those of the University.

To assure the maximum likelihood of success in the College, it is recommended that the student have 4 units of English, 3 or more units of College Preparatory Mathematics—including a minimum of 2 units of Algebra and 1 unit of Geometry, 1 or more units of History and Social Science, 1 or more units of Natural Science, and 1 or more units of Foreign Language. Students expecting to enroll in the College of Business and Public

## HONORS, AWARDS, AND SCHOLARSHIPS

Administration are advised to pursue the pre-college program in high school.

## FINANCIAL AID AND ASSISTANCE

The College has a number of graduate assistantships in the Departments of Business Administration, Economics, Geography, Journalism and Public Relations, and Government and Politics, and in the Bureau of Business and Economic Research and the Bureau of Governmental Research. Applications for assistantships should be made directly to the Dean of the College of Business and Public Administration (See the Graduate School Announcements for graduate rules and regulations).

## HONORS, AWARDS AND SCHOLARSHIPS

### THE DEAN'S LIST OF DISTINGUISHED STUDENTS

Any student who has passed at least 12 hours of academic work in the preceding semester, without failure of any course, and with an average grade on all courses of at least 3.5 will be placed on the Dean's List of Distinguished Students.

### BETA GAMMA SIGMA

The Alpha of Maryland Chapter of Beta Gamma Sigma was chartered in 1940. The purpose of this honorary society is to encourage and reward scholarship and accomplishment among students of commerce and business administration; to promote the advancement of education in the art and science of business; and to foster integrity in the conduct of business operations. Chapters of Beta Gamma Sigma are chartered only in schools holding membership in the American Association of Collegiate Schools of Business. Third and fourth year students in business administration are eligible; if in his third year, a student must rank in the highest four per cent of his class, and if in his fourth year, he must rank in the highest ten per cent in order to be considered for selection.

### THE DELTA SIGMA PI SCHOLARSHIP KEY

This is awarded annually to the student who has maintained the highest scholastic standing during the entire course of study in business administration or economics. Delta Sigma Pi was founded at New York University on November 7, 1907. The Gamma Sigma of Maryland chapter was chartered at the University of Maryland in 1950. Delta Sigma Pi is a professional fraternity organized to foster the study of business in universities; to encourage scholarship, social activity, and the association of students for their mutual advancement by research and practice; to promote closer

## HONORS, AWARDS, AND SCHOLARSHIPS

affiliation between the commercial world and students of commerce; and to further a high standard of commercial ethics and culture, as well as the civic and commercial welfare of the community. Members are selected from the College of Business and Public Administration on the basis of leadership, scholastic standing and promise of future business success.

### KAPPA TAU ALPHA

The Maryland chapter of Kappa Tau Alpha was chartered in 1961. Founded in 1910, this national honorary society has 39 chapters at universities offering graduate or undergraduate preparation for careers in professional journalism. It is dedicated to recognition and promotion of scholarship in journalism. Among its activities is an annual award for an outstanding piece of published research in journalism and mass communications.

### MARYLAND PRESS ASSOCIATION ANNUAL CITATION

This award is presented to the outstanding senior in journalism.

### PHI CHI THETA KEY

The Phi Chi Theta Key is awarded to the outstanding graduating senior woman in the College of Business and Public Administration on the basis of scholarship, activities, and leadership.

### PI SIGMA ALPHA FRED HAYS MEMORIAL AWARD

The Pi Sigma Alpha Fred Hays Memorial Award in Government and Politics is awarded annually by the Department of Government and Politics to the graduating senior who earns the highest grades among the majors in government and politics of the graduating class. The award is a cash award, not less than \$25.00, provided by an anonymous alumnus. This award is named in memory of Fred Hays, an honor graduate and former student president of Pi Sigma Alpha, the honorary political science fraternity. Fred Hays was killed in action in Korea.

### THE *WALL STREET JOURNAL* STUDENT ACHIEVEMENT AWARD

This is awarded annually to the graduating senior who has maintained the highest scholastic achievement in the field of financial administration. The award consists of a silver medal and one year's subscription to the *Wall Street Journal*.

The Alcoa Foundation Scholarship in the amount of \$600 is awarded to a junior majoring in Transportation with a special interest in industrial traffic management.

The Alumni Association of the University provides a scholarship of \$250.



## HONORS, AWARDS, AND SCHOLARSHIPS

The Baltimore Sunpapers Scholarship in Journalism is awarded to a deserving student. The scholarship, in the amount of \$500, is contributed by the Board of Trustees of the A. S. Abell Foundation, Inc., and is awarded to a senior majoring in editorial journalism.

The Baltimore News-Post provides two \$375 journalism scholarships. The Delmarva Traffic Club makes available a scholarship of \$250 for an outstanding transportation student in the junior class making his home on the Delmarva peninsula.

Federal Government Accountants Association of Washington awards a scholarship in the amount of \$300 to a full-time undergraduate majoring in accounting.

The Haskins & Sells Foundation, Inc., makes available a scholarship of \$500 for an exceptional senior student concentrating in accounting who is registered in the College of Business and Public Administration. In addition to the cash award, a token award in the form of an inscribed silver medallion will be given to each award winner.

The Maryland Association of Certified Public Accountants, Inc., awards a scholarship in the amount of \$200 to a Maryland resident majoring in accounting.

Motor Fleet Supervisors Institute—A \$250 award is made to a member of the junior class majoring in Transportation with an interest in motor transportation who has shown in three years of training an apparent ability to succeed. This award is made through the College of Business and Public Administration.

The Montgomery County Press Association's \$200 journalism scholarship is awarded to a student of that county.

Pilot Freight Carriers, Inc., Winston-Salem, North Carolina, provides a \$500 award to a senior in the College who is concentrating in Transportation with a major interest in motor transportation.

The Arthur Young and Co. Foundation, Inc., makes available certain funds for awards for superior senior students concentrating in accounting who are registered in the College.

# REQUIRED COURSES

## I. BUSINESS ADMINISTRATION

Business organizations are set up primarily for the purpose of producing and distributing goods and services. Modern business administration requires a knowledge and understanding of organizational structures, operations and environments. The curricula of the Department of Business Administration emphasize the principles and problems involved in the development of organizations and in the formulation and implementation of their policies.

## STUDY PROGRAMS IN THE DEPARTMENT

The programs of study in the Department of Business Administration are so arranged as to facilitate concentrations according to the major functions of business management. This plan is not, however, based on the view that these major divisions are independent units, but rather that each is closely related to and dependent on the others. Every student in Business Administration is required to complete satisfactorily a minimum number of required basic subjects in the arts, sciences, and humanities as prerequisites to work in the major management fields.

## FRESHMAN AND SOPHOMORE REQUIREMENTS

<i>Courses</i>	<i>Hours</i>
English—1, 2, 3, 4	12
Math. 10, 11	6
G. & P. 1—American Government	3
Speech 1—Public Speaking	3
History 5, 6—History of American Civilization	6
B.A. 10—Introduction to Business	3
Econ. 4—Economic Developments	3
B.A. 20, 21—Principles of Accounting	6
Econ. 31, 32—Principles of Economics	6
1 course from Elective Group 1	3
2 courses from Elective Group A	6- 7 -8
1 Free Elective	3
<hr/>	
60-61-62	

In addition, all students are required to take four semesters of Physical Education (1 hour per semester). Male students take Air Science 2, 3. (4 hours). Women take Health 2, 4 (4 hours).

<i>Elective Group I</i>		<i>Elective Group A</i>			
Philosophy 1	3	Astronomy 1	3	Physics 1	3
Psychology 1	3	Geology 1	3	Botany 1	4
Sociology 1	3	Geography 15	3	Chemistry 1	4
		Mathematics 14	3	Zoology 1	4
		Mathematics 15	3		

## BUSINESS ADMINISTRATION

Students who wish to elect a foreign language must take 12 semester hours of the language in order to obtain credit. Such students may substitute the first semester of foreign language for the Econ. 4 requirement, the second two semesters for the Elective Group A requirement, and the last semester for the free elective.

Students planning to major in Statistics should take Math. 14 and 15 as their Group A electives. Students planning to major in Personnel should take Psychology I as their Group I elective and Psychology 21 as their sophomore elective. Students planning to major in Accounting should take B.A. 22 as their sophomore elective.

The typical course load will be fifteen academic hours each semester. The courses will normally be taken as shown below. However, in individual cases there may be variation in the semester load or sequence of courses, subject to approval of an advisor.

<i>Freshman Year</i>			
English 1	3	English 2	3
B.A. 10 or Sp. 1	3	Sp. 1 or B.A. 10	3
Math. 10	3	Math. 11	3
G. & P. 1 or Group 1 Elec.	3	Group 1 Elec. or G. & P. 1	3
Econ. 4 or Group A Elec.	3-4	Group A Elec. or Econ. 4	3-4
A.S. 2 or Heath 2	2	A. S. 3 or Health 4	2
P.E.	1	P.E.	1
	<hr/>		<hr/>
	18-19		18-19
<i>Sophomore Year</i>			
English	3	English 4	3
B.A. 20	3	B.A. 21	3
Econ. 31	3	Econ. 32	3
Hist. 5	3	Hist. 6	3
Group A or free elect.	3-4	Group A or free elect.	3-4
P.E.	1	P.E.	1
	<hr/>		<hr/>
	16-17		16-17

## JUNIOR AND SENIOR REQUIREMENTS

During the junior and senior years each student is required to complete the following specified courses:

B.A. 130—Business Statistics I	3
B.A. 140—Business Finance	3
B.A. 149—Marketing Principles and Organization	3
B.A. 168—Management and Organization Theory	3
B.A. 180—Business Law	3
B.A. 199—Business Policies	3
	<hr/>
Total	18

## BUSINESS ADMINISTRATION

In addition to the above, two 100 level courses must be taken in Economics, at least one of which must be: Econ. 102, National Income Analysis; Econ. 132, Advanced Economic Principles; Econ. 140, Money and Banking; or Econ. 148, International Economics.

At least 48 hours of the 120 semester hours of academic work required for graduation must be in the Business Administration subjects. In addition to the requirement of an overall average of "C" in academic subjects, an average of "C" in Business Administration subjects is required for graduation. Electives in the curricula of the Department may, with the consent of the advisor, be taken in any department of the university if the student has the necessary prerequisites.

## THE GENERAL CURRICULUM IN BUSINESS ADMINISTRATION

The General Curriculum in Business Administration is designed for those who desire a broad program in management. The curriculum contains a relatively large number of elective courses. Selection is subject to approval by an advisor and must contribute to a program of courses closely balanced between (1) a functional field, (2) the various basic areas of management and (3) non-business fields.

Students selecting this curriculum will take the basic courses required for all students in the Department of Business Administration. In addition, students will take:

### (1) The following required courses:

B.A. 150—Marketing Management	3 s.h.
B.A. 160—Personnel Management I or B.A. 163 Industrial Relations	3 s.h.
B.A. 170—Principles of Transportation	3 s.h.
B.A. 189—Business and Government	3 s.h.
B.A. 198—Structure and Operations of Industries	3 s.h.
	<hr/> 15 s.h.

### (2) three semester hours from the following:

B.A. 110—Intermediate Accounting (3)	
B.A. 148—Advanced Financial Management (3)	
	3 s.h.
B.A. 167—Operations Research I (3)	
B.A. 184—Public Utilities (3)	
Total	<hr/> 18 s.h.



Thus, the upper division requirements are:

Junior-senior requirements of all departmental students	18 s.h.
Junior-senior curriculum concentration	18 s.h.
Electives in 100 level economics courses at least one of which must be Econ. 102, 132, 140, or 148	6 s.h.
Electives to complete 120 s.h. required for graduation	18 s.h.
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Total junior-senior year requirements	60 s.h.

## ACCOUNTING

Accounting, in a limited sense, is the analysis, classification, and recording of financial events and the reporting of the results of such events for an organization. In a broader sense, accounting consists of all financial devices for planning, controlling and appraising performance of an organization. In this broader sense, accounting includes among its many facets financial planning, budgeting, accounting systems, financial management controls, financial analysis of performance, financial reporting, internal and external auditing and taxation of business.

The accounting curriculum provides an educational foundation for careers in accounting, and a foundation for future advancement in other management areas whether in private business organizations, government agencies, or public accounting firms. Students who select this curriculum will complete the freshman and sophomore requirements for all students in the Department of Business Administration. In the sophomore year, accounting majors must take B.A. 22, Accounting Methodology, in lieu of a sophomore year elective.

Course requirements for the junior and senior years are:

(1) the junior-senior requirements for all students in the Department of Business Administration,

(2) the following accounting courses:

B.A. 110, 111—Intermediate Accounting	6
B.A. 121—Cost Accounting	4
B.A. 123—Income Tax Accounting	4

and 9 semester hours from the following:

B.A. 118—Governmental Accounting	3
B.A. 119—Budgeting and Control	3
B.A. 120—Accounting Systems	3
B.A. 122—Auditing Theory and Practice	3
B.A. 124, 126—Advanced Accounting	3, 3
B.A. 125—C.P.A. Problems	4
B.A. 127—Advanced Auditing Theory and Practice	3
B.A. 128—Advanced Cost Accounting	2

Note: B.A. 120 and 124 are offered only in the summer session.

## BUSINESS ADMINISTRATION

Thus, the upper division requirements for accounting majors are:

Junior-senior requirements of all departmental students.	18 s. h.
Junior-senior accounting requirements (minimum)	23 s. h.
Electives in 100 level economics courses at least one of which must be Econ. 102, 132, 140, or 148	6 s. h.
Electives (to complete 120 semester hours required for graduation)	13 s. h.
Total Junior-senior year requirements	60 s. h.

The maximum number of semester hours of credit for accounting courses that may be counted toward the graduation requirement is thirty-eight. If thirty-eight semester hours are taken toward graduation, either B.A. 118 or 119 must be included.

The educational requirement of the Maryland State Board of Public Accountancy for taking the C.P.A. examination *without practical experience* total forty-four semester hours of accounting courses plus eight semester hours of business law. Students wishing to satisfy the Board's requirements must successfully complete all accounting courses except B.A. 118 and 119. Also they must successfully complete B.A. 181 and 182, as well as the required B.A. 180, to satisfy the Board's business law requirements. *Only thirty-five semester hours of the Board's accounting requirements may be credited toward graduation requirements.* Thus, a student wishing to satisfy both the graduation requirements and the requirements of the Board to sit for the C.P.A. examination *without experience* must take 9 semester hours of accounting courses beyond the maximum that may be credited for graduation. This can be done only by attending one summer session, for B.A. 120, 124, and 182 are offered only during the summer. Students not wishing to satisfy the Board's requirements to sit for the C.P.A. examination without experience are eligible to take the examination after obtaining two years of practical experience satisfactory to the Board.

A student planning to take the C.P.A. examination in a State other than Maryland should determine the course requirements, if any, for such State, and arrange his program accordingly.

## FINANCE

The curriculum in finance is designed to acquaint the student with financing methods and institutions and to familiarize him with the basic principles of financial analysis as used in managerial decision-making. Career destinations in the general area of finance include those in corporate financial management; investment management; the banking fields and insurance. Careers are also open in government service, for example, in regulatory agencies and international finance.

## BUSINESS ADMINISTRATION

Students selecting this curriculum will take, in addition to the courses required for all students in the Department of Business Administration:

(1) The following required courses

B.A. 110, 111—Intermediate Accounting	6 s. h.
B.A. 141—Security Analysis	3 s. h.
B.A. 143—Credit Management	3 s. h.
B.A. 148—Advanced Financial Management	3 s. h.
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Total	15 s. h.

and

(2) three semester hours from the following:

Econ. 142—Public Finance (3)	}	3 s. h.
Econ. 147—Business Cycles (3)		
B.A. 167—Operations Research I (3)		
B.A. 184—Public Utilities (3)		
B.A. 196—Real Estate Finance <sup>1</sup> (3)		
		<hr/>
Total		18 s. h.

Thus, the upper division requirements are:

Junior-senior requirements of all departmental students	18 s. h.
Junior-senior curriculum concentration	18 s. h.
Electives in 100 level economics courses at least one of which must be Econ. 102, 132, 140, or 148	6 s. h.
Electives to complete 120 semester hours required for graduation	18 s. h.
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Total Junior-senior year requirements	60 s. h.

## INSURANCE AND REAL ESTATE

Students interested in insurance or real estate may concentrate either in General Business or Finance and plan with their advisers a group of electives to meet their specialized needs. Courses offered in insurance and real estate include life insurance, property insurance, real estate principles, and real estate finance.

## MARKETING

Marketing involves the functions performed in getting goods and services from producers to users. Career opportunities exist in manufacturing, wholesaling and retailing and include sales administration, marketing research, advertising and merchandising.

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<sup>1</sup> Students choosing this course should first take BA195—Real Estate Principles.

BUSINESS ADMINISTRATION

Students preparing for work in marketing research are advised to elect additional courses in Statistics.

In addition to the junior-senior courses taken by all students, the marketing program consists of:

(1) the following required courses:

B.A. 150—Marketing Management	3 s.h.
B.A. 151—Advertising	3 s.h.
B.A. 154—Retail Management	3 s.h.
B.A. 156—Marketing Research	3 s.h.
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Total required	12 s.h.

and

(2) six semester hours from the following:

B.A. 143—Credit Management (3)	}	6 s. h.
B.A. 132—Sample Surveys in Business and Economics (3)		
B.A. 153—Purchasing Management (3)		
B.A. 157—International Marketing (3)		
B.A. 158—Advertising Management (3)		
B.A. 171—Traffic and Physical Distribution Management (3)		
B.A. 167—Operations Research I (3)		
B.A. 101—Electronic Data Processing (3)		
Journ. 152—Advertising Copy and Layout (3)		
Total		18 s.h.

Thus, the upper division requirements are:

Junior-senior requirements of all departmental students	18 s.h.
Junior-senior curriculum concentration	18 s.h.
Electives in 100 level economics courses at least one of which must be Econ. 102, 132, 140, or 148	6 s.h.
Electives to complete 120 semester hours required for graduation	18 s.h.
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Total, Junior-senior year requirements	60 s.h.

PERSONNEL AND INDUSTRIAL RELATIONS

Personnel administration has to do with the direction of human effort. It is concerned with securing, maintaining, and utilizing, an effective working force. People professionally trained in personnel administration find career opportunities in business, in government, in educational institutions, and in charitable and other organizations.



## BUSINESS ADMINISTRATION CURRICULUM

The required courses are:

B.A. 160—Personnel Management I	3 s.h.
B.A. 161—Personnel Management II	3 s.h.
B.A. 163—Industrial Relations	3 s.h.
B.A. 164—Labor Legislation	3 s.h.
B.A. 169—Production Management	
or	
B.A. 189—Business and Government	3 s.h.
Psych. 161—Industrial Psychology	3 s.h.
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Total	18 s.h.

Since Psych. 161 cannot be taken without six hours of psychology, students who wish to follow this curriculum are advised to take Psych. 1 as their Group 1 Elective and Psych. 21 as their sophomore year elective.

Thus, the upper division requirements are:

Junior-senior requirements of all departmental students	18 s.h.
Junior-senior curriculum concentration	18 s.h.
Electives in 100 level economics courses at least one of which must be Econ. 102, 132, 140, or 148	6 s.h.
Electives to complete 120 semester hours required for graduation	18 s.h.
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Total, Junior-senior year requirements	60 s.h.

## PRODUCTION MANAGEMENT

This curriculum is designed to acquaint the student with the problems of organization and control in the field of production management. Theory and practice with reference to organization, policies, methods, processes and techniques are surveyed, analyzed, and evaluated.

The courses in addition to those required of all students in the College are:

(1) The following required courses:

B.A. 121—Cost Accounting	4 s.h.
B.A. 160—Personnel Management I	3 s.h.
B.A. 169—Production Management	3 s.h.
B.A. 165—Advanced Production Management	3 s.h.
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Total Required	13 s.h.

and

BUSINESS ADMINISTRATION CURRICULUM

(2) six hours from the following:

B.A. 134—Statistical Quality Control (3)	}	6 s.h.
B.A. 153—Purchasing Management (3)		
B.A. 163—Industrial Relations (3)		
B.A. 167—Operations Research I (3)		
B.A. 171—Traffic and Physical Distribution Management (3)		
Total		19 s.h.

Thus, the upper division requirements are:

Junior-senior requirements of all departmental students	18 s.h.
Junior-senior curriculum concentration	19 s.h.
Electives in 100 level economics courses at least one of which must be Econ. 102, 132, 140, or 148	6 s.h.
Electives to complete 120 semester hours required for graduation	17 s.h.
Total Junior-senior year requirements	60 s.h.

STATISTICS

Statistics consists of a body of methods for utilizing probability theory in decision-making processes. Important statistical activities ancillary to the decision-making process are the systematization of quantitative data and the measurement of variability. Some specialized areas within the field of statistics are: sample surveys, forecasting quality control, design of experiments, Bayesian decision processes, actuarial statistics, and data processing. Statistical methods—for example, sample survey techniques—are widely used in accounting, marketing, industrial management and government applications.

An aptitude for applied mathematics and a desire to understand and apply scientific methods to significant problems are important prerequisites for the would-be statistician.

Students planning to major in statistics should take Math. 14 and 15 as Group A electives.

Students selecting this curriculum will take, in addition to the courses required for all students in the Department of Business Administration:

## BUSINESS ADMINISTRATION CURRICULUM

(1) the following required courses:

B.A. 131—Business Statistics II	3 s.h.
B.A. 132—Sample Surveys in Business and Economics	3 s.h.
B.A. 134—Statistical Quality Control (3)	3 s.h.
B.A. 101— Electronic Data Processing	3 s.h.
	<hr/>
	12 s.h.

and

(2) three semester hours from the following:

B.A. 102—Electronic Data Processing Applications (3)	} 6 s.h.
B.A. 135—Statistical Analysis and Forecasting	
B.A. 167—Operations Research I (3)	
Math. 133—Applied Probability and Statistics I	
	<hr/>
Total	18 s.h.

Thus, the upper division requirements are:

Junior-senior requirements of all departmental students	18 s.h.
Junior-senior curriculum concentration	18 s.h.
Electives in 100 level economics courses at least one of which must be Econ. 102, 132, 140, or 148	6 s.h.
Electives to complete 120 s.h. required for graduation	18 s.h.
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Total junior-senior requirement	60 s.h.

## TRANSPORTATION

Transportation involves the movement of persons and goods in the satisfaction of human needs. The curriculum in transportation includes an analysis of the services and management problems, such as pricing, financing, and organization, of the five modes of transport—air, motor, pipelines, railroads, and water—and covers the scope and regulation of transportation in our economy. The effective management of transportation involves a study of the components of physical distribution and the interaction of procurement, the level and control of inventories, warehousing, material handling, transportation, and data processing.

The curriculum in transportation is designed to prepare students to assume responsible positions with carriers, governmental agencies, and traffic and physical distribution management in industry.

Course requirements for the junior and senior years are, in addition to the junior-senior requirements for all students in the Department of Business Administration:

BUSINESS ADMINISTRATION CURRICULUM

(1) the required following courses:

B.A. 170—Principles of Transportation	3 s.h.
B.A. 171—Traffic and Physical Distribution Management	3 s.h.
B.A. 172—Motor Transportation	3 s.h.
B.A. 174—Commercial Air Transportation	3 s.h.
B.A. 175—Advanced Transportation Problems (3)	3 s.h.
Total	15 s.h.

and

(2) three semester hours to be selected from the following:

B.A. 173—Water Transportation	}	3 s.h.
B.A. 176—Urban Transport and Urban Development (3)		
B.A. 157—International Marketing (3)		
B.A. 184—Public Utilities (3)		
Total required		18 s.h.

Thus, the upper division requirements are:

Junior-senior requirements of all departmental students	18 s.h.
Junior-senior curriculum concentration	18 s.h.
Electives in 100 level economics courses at least one of which must be Econ. 102, 132, 140, or 148	6 s.h.
Electives to complete 120 s.h. required for graduation	18 s.h.
Total junior-senior year requirements	60 s.h.

COMBINED BUSINESS ADMINISTRATION AND  
LAW PROGRAM

The Department of Business Administration offers a combined Business Administration-Law Curriculum in which the student completes three years in the General Curriculum in Business Administration in the department and a fourth year of work in the Law School of the University of Maryland. Admission to the Law School is contingent upon meeting the applicable standards of that school. Individual students are responsible to secure from the Law School its current admission requirements. The student must complete all the courses required of students in the Department plus the courses normally required for the General Curriculum in Business Administration through the junior year, plus enough electives to equal a minimum of 90 semester hours; an average grade of "C" or better must be earned. No business law course can be included in the 90 hours. The last year of college work before entering the Law School must be completed in residence at College Park. At least 30 hours of work must be in courses numbered 100 or above.



## BUSINESS ADMINISTRATION

The Bachelor of Science degree from the College of Business and Public Administration is conferred upon students who complete the first year in the Law School with an average grade of "C" or better.

### MASTER OF BUSINESS ADMINISTRATION

Candidates for the degree of Master of Business Administration are accepted in accordance with the procedures and requirements for the Graduate School. (See the Graduate School Announcements, Section II.)

## BUSINESS ADMINISTRATION

*Professors:* TAFF, CALHOUN, CLEMENS, COOK, FISHER, GENTRY, NELSON, SYLVESTER, SWEENEY, AND WRIGHT.

*Associate Professors:* ASHMEN, DAWSON, AND SPIVEY.

*Assistant Professors:* ANDERSON, BRUNNER, CLICKNER, DAIKER, EDELSON, HERMANSON, HIMES, NASH, PAINE, RAIA, SCHELLENBERGER, SMERK.

*Instructors:* BEAL, CAHILL, CHAPPELL, EMERY, NEFFINGER, AND SIMPSON.

*Lecturer:* TIERNEY.

### B.A. 10. INTRODUCTION TO BUSINESS. (3)

A survey course covering the internal and functional organization of a business enterprise, its organization and control.

### B.A. 14. SURVEY OF OFFICE MACHINES. (2)

Prerequisite, sophomore standing. Laboratory fee, \$7.50. The various types of office business machines are surveyed, their capacities and special functions compared. Skill is developed through actual use and demonstration of such machines as: accounting, duplicating, dictating and transcribing, adding and calculating, and other functional types of machines and equipment. The course is designed also to give special training in the handling of practical business problems with machine application.

### B.A. 20, 21. PRINCIPLES OF ACCOUNTING. (3, 3)

Prerequisite, sophomore standing. The principles of accounting for business enterprise and the use of accounting data in making business decisions.

### B.A. 22. ACCOUNTING METHODOLOGY. (3)

Required of majors in accounting. Specialized problems of accounting techniques; cash and accrual basis, single entry and complex adjustments and corrections of prior years' data.

### *For Graduates and Advanced Undergraduates*

### B.A. 100. OFFICE OPERATIONS AND MISMANAGEMENT. (3)

Prerequisite, junior standing. Deals with the principles of scientific management

## BUSINESS ADMINISTRATION

as they apply to the examination, improvement, installation, and operation of the most effective paperwork methods and systems that a given organization can use to achieve its objectives. Procedure flow analysis and form design for control of paperwork; process, work distribution, and layout charts, distribution of authority and responsibility for office activities are among the areas considered.

### B.A. 101. ELECTRONIC DATA PROCESSING. (3)

Prerequisite, junior standing, Math. 11 or the equivalent. Laboratory fee, \$10.00. The electronic digital computer and its use as a tool in processing data. The course includes the following areas: (1) organization of data processing systems, (2) environmental aspects of computer systems, (3) fundamentals of programming using a common problem-oriented language, and (4) management control problems and potentials inherent in mechanized data processing systems.

### B.A. 102. ELECTRONIC DATA PROCESSING APPLICATIONS. (3)

Prerequisite, B.A. 101. Laboratory fee, \$10.00. Intensive study of computer applications using a problem-oriented language. Introduction of computer methods for the solution of business problems. Laboratory exercises in programming and development of computer techniques.

### B.A. 103. INTRODUCTION TO SYSTEMS ANALYSIS. (3)

Prerequisite, B.A. 102. Math. 15 or the equivalent. Laboratory fee, \$10.00. The use of the computer in management and the operation of business. The course includes the following areas: (1) the principles of systems analysis, (2) recent applications and innovations of the systems concept, (3) design and implementation of computer systems, including such techniques as mathematical programming, simulation, business games, and network analysis, (4) laboratory use of a digital computer in the application of these techniques.

### B.A. 110, 111. INTERMEDIATE ACCOUNTING. (3, 3)

Prerequisite, B.A. 21. A comprehensive study of the theory and problems of valuation of assets, application of funds, corporation accounts and statements, and the interpretation of accounting statements.

### B.A. 112. RECORDS MANAGEMENT. (2)

First and second semesters. Prerequisite, junior standing. Laboratory fee, \$7.50. Specific management methods and techniques that have proved valuable in the creation, use, maintenance, protection and disposition of records are studied.

### B.A. 118. GOVERNMENTAL ACCOUNTING. (3)

Prerequisite, B.A. 21. The content of this course covers the scope and functions of governmental accounting. It considers the principles generally applicable to all forms and types of governmental bodies and a basic procedure adaptable to all governments.

### B.A. 119. BUDGETING AND CONTROL. (3)

Prerequisite, B.A. 21. The use of financial data in controlling an enterprise. Budgetary formulation, execution and appraisal. The use of accounting in managerial decision making.

### B.A. 120. ACCOUNTING SYSTEMS. (3)

Prerequisite, B.A. 20. A study of the factors involved in the design and installation of accounting systems: the organization, volume and types of transac-

## BUSINESS ADMINISTRATION

tions, charts of accounts, accounting manuals, the reporting system. Offered only in Summer School.

### B.A. 121. COST ACCOUNTING. (4)

Prerequisite, B.A. 21. A study of the fundamental procedures of cost accounting, including those for job order, process and standard cost accounting systems.

### B.A. 122. AUDITING THEORY AND PRACTICE. (3)

Prerequisite, B.A. 111. A study of the principles and problems of auditing and application of accounting principles to the preparation of audit working papers and reports.

### B.A. 123. INCOME TAX ACCOUNTING. (4)

Prerequisite, B.A. 21. A study of the important provisions of the Federal Tax Laws, using illustrative examples, selected questions and problems, and the preparation of returns.

### B.A. 124. ADVANCED ACCOUNTING. (3)

Prerequisite, B.A. 111. Advanced Accounting theory applied to specialized problems in partnerships, ventures, consignments, installment sales, insurance, statement of affairs, receiver's accounts, realization and liquidation reports, and application of mathematics to accounting problems. Offered only in Summer School.

### B.A. 125. C.P.A. PROBLEMS. (4)

Prerequisite, B.A. 111, or consent of instructor. A study of the nature, form and content of C.P.A. examinations by means of the preparation of solutions to, and an analysis of, a large sample of C.P.A. problems covering the various accounting fields.

### B.A. 126. ADVANCED ACCOUNTING. (3)

Prerequisite, B.A. 111. Home office and branch accounting, parent and subsidiary accounting, and foreign exchange.

### B.A. 127. ADVANCED AUDITING THEORY AND PRACTICE. (3)

Prerequisite, B.A. 122. Advanced auditing theory and practice and report writing.

### B.A. 128. ADVANCED COST ACCOUNTING. (2)

Prerequisite, B.A. 121. A continuation of basic cost accounting with special emphasis on process costs, standard costs, joint costs and by-product costs.

### B.A. 129. APPRENTICESHIP IN ACCOUNTING. (0)

Prerequisites, minimum of 20 semester hours in accounting and the consent of the accounting staff. A period of apprenticeship is provided with nationally known firms of certified public accountants from about January 15 to February 15, and for a semester after graduation.

### B.A. 130. BUSINESS STATISTICS I. (3)

Prerequisite, junior standing. Laboratory fee, \$6.00. An introductory course. Emphasis is placed upon statistical inference. Topics covered include statistical observations, frequency distributions, averages, measures of variability, elementary probability, sampling, distributions, problems of estimation, simple tests of hypotheses, index numbers, time series, graphical and tabular presentation. Selected applications of the techniques are drawn from economics, industrial management, marketing and accounting.

## BUSINESS ADMINISTRATION

### B.A. 131. BUSINESS STATISTICS II. (3)

Prerequisite, B.A. 130. Laboratory fee, \$6.00. Review of elementary probability. Population distribution. Sampling distributions; binomial, Poisson, normal, "t", chi-square and F. Estimates and tests of hypotheses concerning the mean, variance and other parameters. Introduction to analysis of variance, linear regression and correlation.

### B.A. 132. SAMPLE SURVEYS IN BUSINESS AND ECONOMICS. (3)

Prerequisite, B.A. 130. Laboratory fee, \$6.00. A general course in scientific sample survey techniques. Review of elementary probability, characteristics of good estimators, errors of observation, simple random sampling, stratified random sampling, cluster sampling, comparison of various sample designs, cost functions, examples of actual survey practices.

### B.A. 134. STATISTICAL QUALITY CONTROL. (3)

Prerequisite, B.A. 130. Laboratory fee, \$6.00. Statistical fundamentals, theory, construction and use of control charts, acceptance sampling by attributes and variables, work sampling and other industrial applications of statistics.

### B.A. 135. STATISTICAL ANALYSIS AND FORECASTING. (3)

Prerequisite, B.A. 130 or permission of instructor. Laboratory fee, \$6.00. Classical time series analysis, trend, periodic and irregular components, seasonal adjustment, growth curves, recent developments in time series, analysis, techniques of forecasting such quantities as labor force, capital formation, demand and sales.

### B.A. 140. BUSINESS FINANCE. (3)

Prerequisite, B.A. 21. This course deals with principles and practices involved in the organization, financing, and rehabilitation of business enterprises; the various types of securities and their use in raising funds, apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

### B.A. 141. SECURITY ANALYSIS. (3)

Prerequisite, B.A. 140. A study of the principles and methods used in the analysis, selection, and management of investments, investment programs, sources of investment information, security price movements, government, real estate, public utility, railroad and industrial securities.

### B.A. 143. CREDIT MANAGEMENT. (3)

Prerequisite, B.A. 140. A study of the nature of credit and the principles applicable to its extension and redemption for mercantile and consumer purposes; sources of credit information and analysis of credit reports; the organization and management of a credit department for effective control. Recent developments and effective legal remedies available.

### B.A. 148. ADVANCED FINANCIAL MANAGEMENT. (3)

Prerequisite, B.A. 140. An advanced course in finance. Emphasis is placed upon the techniques employed by executives in their application of financial management practice to selected problems and cases. Critical classroom analysis is brought to bear upon actual methods and techniques used by business enterprises.

### B.A. 149. MARKETING PRINCIPLES AND ORGANIZATION. (3)

Prerequisite, Econ. 32 or 37. This is an introductory course in the field of



marketing. Its purpose is to give a general understanding and appreciation of the forces operating, institutions employed, and methods followed in marketing agricultural products, natural products, services, and manufactured goods.

### **B.A. 150. MARKETING MANAGEMENT. (3)**

Prerequisite, B.A. 149. A study of the work of the marketing division in a going organization. The work of developing organizations and procedures for the control of marketing activities are surveyed. The emphasis throughout the course is placed on the determination of policies, methods, and practices for the effective marketing of various forms of manufactured products.

### **B.A. 151. ADVERTISING. (3)**

Prerequisite, B.A. 149 or consent of instructor. A study of the role of advertising in the American economy; the impact of advertising on our economic and social life, the methods and techniques currently applied by advertising practitioners, the role of the newspaper, magazine, and other media in the development of an advertising campaign, modern research methods to improve the effectiveness of advertising, and the organization of the advertising business.

### **B.A. 153. PURCHASING MANAGEMENT. (3)**

Prerequisite, B.A. 149. Determining the proper sources, quality and quantity of supplies, and methods of testing quality; price policies, price forecasting, forward buying, bidding and negotiation; budgets and standards of achievement. Attention is given to government purchasing and methods and procedures used in their procurement.

### **B.A. 154. RETAIL MANAGEMENT. (3)**

Prerequisite, B.A. 20 and 149. Retail store organization, location, layout and store policy; pricing policies, price lines, brands, credit policies, records as a guide to buying; purchasing methods; supervision of selling; training and supervision of retail sales force; and administrative problems.

### **B.A. 156. MARKETING RESEARCH METHODS. (3)**

Prerequisites, B.A. 130 and B.A. 149. This course is intended to develop skill in the use of scientific methods in the acquisition, analysis and interpretation of marketing data. It covers the specialized fields of marketing research, the planning of survey projects, sample design, tabulation procedure and report preparation.

### **B.A. 157. INTERNATIONAL MARKETING. (3)**

Prerequisite, B.A. 149. Functions of various exporting agencies; documents and procedures used in exporting and importing transactions. Methods of procuring goods in foreign countries; financing of import shipments; clearing through the customs districts; and distribution of goods in the United States.

### **B.A. 158. ADVERTISING MANAGEMENT. (3)**

Prerequisite, B.A. 149. This course is concerned with the way in which business firms use advertising as a part of their marketing program. The case study method is used to present advertising problems taken from actual business practice. Cases studied illustrate problems in demand stimulation, media selection, advertising research, testing, and statistical control of advertising.

### **B.A. 160. PERSONNEL MANAGEMENT I. (3)**

This course deals with the problems of directing and supervising employees under modern industrial conditions. Two phases of personal administration are stressed,

## **BUSINESS ADMINISTRATION**

the application of scientific management and the importance of human relations in this field.

### **B.A. 161. PERSONNEL MANAGEMENT II. (3)**

Prerequisite or Corequisite, B.A. 160. Job evaluation and merit rating and other personnel management techniques generally employed in business.

### **B.A. 163. INDUSTRIAL RELATIONS. (3)**

A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

### **B.A. 164. LABOR LEGISLATION. (3)**

Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.

### **B.A. 165. ADVANCED PRODUCTION MANAGEMENT. (3)**

Prerequisite, B.A. 169. A study of typical problems encountered by the factory manager. The objective is to develop the ability to analyze and solve problems in management control of production and in the formulation of production policies. Among the topics covered are plant location, production planning and control, methods analysis and time study.

### **B.A. 166. BUSINESS COMMUNICATIONS. (3)**

Prerequisite, junior standing. A systematic study of the principles of effective written communications in business. The fundamental aim is to develop the ability to write clear, correct, concise, and persuasive business letters and reports.

### **B.A. 167. OPERATIONS RESEARCH I. (3)**

The philosophy, methods, and objectives of operations research. Basic methods are examined and their application to functional areas of business are covered.

### **B.A. 168. MANAGEMENT AND ORGANIZATION THEORY. (3)**

The development of management and organization theory, nature of the management process and function and its future development. The role of the manager as an organizer and director, the communication process, goals and responsibilities.

### **B.A. 169. PRODUCTION MANAGEMENT. (3)**

Studies the operation of a manufacturing enterprise, concentrating on the economies of production. Introduces a grounding in analytical method early so that the broad problem areas of system design, operation, and control can be based upon the analytical method.

### **B.A. 170. PRINCIPLES OF TRANSPORTATION. (3)**

A general course covering the five fields of transportation, their development, service and regulation.

### **B.A. 171. TRAFFIC AND PHYSICAL DISTRIBUTION MANAGEMENT. (3)**

Prerequisite, junior standing. Examines the management aspects of the business firm in moving their raw materials and finished goods, through traffic, ware-

## BUSINESS ADMINISTRATION

housing, industrial packaging, material handling, and inventory. A systematic examination of the trade-off possibilities and management alternatives to minimize cost of product flow and maximizing customer service is provided.

### B.A. 172. MOTOR TRANSPORTATION. (3)

Prerequisite, B.A. 170. The development and scope of the motor carrier industry, different types of carriers, economics of motor transportation, services available, federal regulation, highway financing, allocation of cost to highway users, highway barriers.

### B.A. 173. WATER TRANSPORTATION. (3)

Prerequisite, B.A. 170. Water carriers of all types, development and types of services, trade routes, inland waterways, company organization, the American Merchant Marine as a factor in national activity.

### B.A. 174. COMMERCIAL AIR TRANSPORTATION. (3)

Prerequisite, B.A. 170. The air transportation system of the United States; airways, airports, airlines. Federal regulation of air transportation. Problems and services of commercial air transportation; economics, equipment, operations, financing, selling of passenger and cargo services. Air mail development and services.

### B.A. 175. ADVANCED TRANSPORTATION PROBLEMS. (3)

Prerequisite, B.A. 170. A critical examination of current government transportation policy and proposed solutions. Urban and intercity managerial transport problems are also considered.

### B.A. 176. URBAN TRANSPORT AND URBAN DEVELOPMENT. (3)

Prerequisite, junior standing. An analysis of the role of urban transportation in present and future urban development. The interaction of transport pricing and service, urban planning, institutional restraints, and public land uses, is studied.

### B.A. 180. BUSINESS LAW. (3)

Legal aspects of business relationships, contracts, negotiable instruments, agency, partnership, corporations, real and personal property, and sales.

### B.A. 181. BUSINESS LAW. (3)

Legal aspects of business relationships, contracts, negotiable instruments, agency partnerships, corporations, real and personal property, and sales.

### B.A. 182. ADVANCED BUSINESS LAW. (3)

Designed primarily for CPA candidates. Legal aspects of wills, insurance, torts and bankruptcy. Offered only in Summer School.

### B.A. 184. PUBLIC UTILITIES. (3)

Prerequisites, Econ. 32 or 37. Using the regulated industries as specific examples attention is focused on broad and general problems in such diverse fields as constitutional law, administrative law, public administration, government control of business, advanced economic theory, accounting, valuation and depreciation, taxation, finance, engineering and management.

### B.A. 189. BUSINESS AND GOVERNMENT. (3)

Prerequisites, Econ. 32 or 37. A study of the role of government in modern

## BUSINESS ADMINISTRATION

economic life. Social control of business as a remedy for the abuses of business enterprise arising from the decline of competition. Criteria of limitations on government regulation of private enterprise.

### B.A. 190. LIFE INSURANCE. (3)

Prerequisite, Econ. 32 or 37. A general survey of life insurance: its institutional development, selection of risks, mathematical calculations, contract provisions, kinds of policies, their functional uses, industrial and group contracts and government supervision.

### B.A. 191. PROPERTY INSURANCE. (3)

Prerequisite, Econ. 32 or 37. A study of the insurance coverages written to protect individuals and businesses; fire, extended coverage, business interruption, automobile, liability, fidelity, surety, inland marine and ocean marine. Hazards, rate-making, legal principles, standard forms and business practices are discussed.

### B.A. 195. REAL ESTATE PRINCIPLES. (3)

Prerequisite, Econ. 32 or 37. This course covers the nature and uses of real estate, real estate as a business, basic legal principles, construction problems and home ownership, city planning, and public control and ownership of real estate.

### B.A. 196. REAL ESTATE FINANCE. (3)

Prerequisite, Econ. 32 or 37 and B.A. 195. This course includes consideration of the factors influencing real estate values, methods and techniques in the general appraisal of real estate by brokers and professional appraisers, and general problems in real estate financing.

### B.A. 198. STRUCTURE AND OPERATIONS OF INDUSTRIES. (3)

Prerequisite, senior standing. The impact of technology and production policies on the economic, financial, marketing, and locational policies of representative industries. A background course for students in industrial and financial management, business economics, general business, and related areas.

### B.A. 199. BUSINESS POLICIES. (3)

Prerequisite, senior standing. A case study course in which the aim is to have the student apply both what he has learned of general management principles and their specialized functional applications of the overall management function in the enterprise.

### *For Graduates*

### B.A. 210. ADVANCED ACCOUNTING THEORY. (3)

### B.A. 220. MANAGERIAL ACCOUNTING. (3)

### B.A. 221, 222. SEMINAR IN ACCOUNTING. (1-6)

### B.A. 226. ACCOUNTING SYSTEMS. (3)

### B.A. 228. RESEARCH IN ACCOUNTING. (1-6)

### B.A. 229. PROBLEMS OF CONTROL AND ORGANIZATION. (1-6)



**B.A. 230. ADVANCED BUSINESS STATISTICS. (3)**

Prerequisite, B.A. 130 or consent of instructor. Laboratory fee, \$6.00. Bayesian decision processes and other statistical methods applicable to the operations of the business firm and the analysis of the economy. Methodological topics include a consideration of utility, expected values, estimation of probabilities, opportunity loss and cost of uncertainty, sampling, sequential decision procedures, and selected topics from classical statistics. Applications are made to the problems of inventory control, production, investment, and other business functions.

**B.A. 231. MULTIVARIATE ANALYSIS. (3)**

Prerequisites, B.A. 131 and Math. 15 or equivalent. Laboratory fee, \$6.00. Basic principles underlying the construction of cross-sectional and longitudinal multivariate models appropriate for the solution of business and economic problems.

**B.A. 234. MANAGERIAL ANALYSIS I. (3)**

Required of M.B.A. candidates.

The utilization of the scientific method in decision making. Various methodologies are utilized in order to evaluate and interpret findings for management action.

**B.A. 235. MANAGERIAL ANALYSIS II. (3)**

Designed to enable the student to go into greater depth in the use of analytical techniques. Where feasible, data processing is applied, and simulated experiences are provided. The aim is to encourage the development of the perceptive approach to complex business situations.

**B.A. 237. MANAGEMENT SIMULATION I. (3)**

Laboratory fee, \$6.00. Application of management principles to the solution of complex business problems. This is accomplished in conjunction with the use of computer facilities at the Computer Science Center on the campus.

**B.A. 240. SEMINAR IN FINANCIAL MANAGEMENT. (1-6)**

**B.A. 242. FINANCIAL ADMINISTRATION. (3)**

Required of M.B.A. candidates.

The role of the financial manager in executive decision making. Financial planning, analysis, and control in such areas as the allocation of financial resources within the firm, forecasting and budgeting, cost and profit controls, capital budgeting and the bases for investment decisions, alternative sources of short-term and long-term financing and financial problems of growth.

**B.A. 245. RESEARCH IN FINANCE. (1-6)**

**B.A. 249. PROBLEMS IN FINANCIAL ADMINISTRATION.**

**B.A. 250. PROBLEMS IN SALES MANAGEMENT. (1-6)**

**B.A. 251. PROBLEMS IN ADVERTISING. (1-6)**

**B.A. 252. PROBLEMS IN RETAIL MANAGEMENT. (1-6)**

**B.A. 257. SEMINAR IN MARKETING MANAGEMENT. (3)**

**B.A. 258. RESEARCH PROBLEMS IN MARKETING. (1-6)**

**B.A. 259. BUSINESS LOGISTICS. (3)**

Involves the optimization of human and material resources by their proper

## BUSINESS ADMINISTRATION

application at the right time and place to support the business enterprise. Consideration is given to analysis of material and manpower requirements, production planning and scheduling, acquisition, inventory control, and distribution. The role of advanced planning and forecasting is considered in minimizing costs and securing the best combination of resources. Impact of technology upon the utilization of resources is considered.

### B.A. 262. SEMINAR IN CONTEMPORARY TRENDS IN LABOR RELATIONS. (1-6)

### B.A. 264. BEHAVIORAL FACTORS IN MANAGEMENT. (3)

Required of M.B.A. candidates.

A critical analysis of the impact of the behavioral sciences on traditional concepts of management as process and as organization. Included within the area of analysis are such subjects as human motivation, human relations, morale, status, role, organization, communication, bureaucracy, the executive role, leadership, and training.

### B.A. 265. DEVELOPMENT AND TRENDS IN PRODUCTION MANAGEMENT. (3)

### B.A. 266. RESEARCH IN PERSONNEL MANAGEMENT. (1-6)

### B.A. 267. RESEARCH IN INDUSTRIAL RELATIONS. (1-6)

### B.A. 269. PROBLEMS IN EMPLOYER-EMPLOYEE RELATIONSHIPS. (1-6)

### B.A. 270. RESEARCH IN TRANSPORTATION. (1-6)

### B.A. 271. THEORY OF ORGANIZATION. (3)

### B.A. 272. SEMINAR IN MANAGEMENT OF PHYSICAL DISTRIBUTION. (3)

### B.A. 275. SPECIAL STUDIES IN TRANSPORTATION. (3)

### B.A. 277. SEMINAR IN TRANSPORTATION. (3)

### B.A. 280. SEMINAR IN BUSINESS AND GOVERNMENT. (3)

### B.A. 281. PRIVATE ENTERPRISE AND PUBLIC POLICY. (3)

Examines the executives social and ethical responsibilities to his employees, customers, and to the general public. Consideration is given to the conflicts occasioned by competitive relationships in the private sector of business and the effect of institutional restraints. The trends in public policy and their future effect upon management are examined. For comparative purposes, several examples of planned societies are considered.

### B.A. 282. PRODUCT, PRODUCTION AND PRICING POLICY

#### (3) Required of M.B.A. Candidates.

The application of economics theory to the business enterprise in respect to the determination of policy and the handling of management problems with particular reference to the firm producing a complex line of products. Nature of competition. Pricing policy. Interrelationship of production and marketing problems. Basic types of cost. Control systems. Theories of depreciation and investment and the impact of each upon costs.

### B.A. 284. SEMINAR IN PUBLIC UTILITIES. (1-6)

B.A. 290. SEMINAR IN INSURANCE. (3)

B.A. 295. SEMINAR IN REAL ESTATE. (3)

B.A. 399. THESIS. (1-6)

## II. ECONOMICS

The program of studies in economics is designed to meet the needs of students who wish to concentrate either on a major or minor scale in this division of the social sciences. Students who expect to enroll in the professional schools and those who are planning to enter the fields of business, public administration, foreign service, or social service administration will find courses in economics of considerable value to them in their later work. A student of economics should choose courses to meet the requirements for his major objective. If he expects to pursue graduate study, he should consult Graduate School Announcements for the general requirements for advanced degrees.

### REQUIREMENTS FOR THE ECONOMICS MAJOR

In addition to the University requirements in social studies, English, air science, hygiene, and physical activities, the student majoring in economics is required to complete a minimum of 36 semester hours in economics with an average grade of not less than "C." Required courses are Econ. 4, 31, 32, 102, and 132, and B.A. 130 (Statistics). A student will normally have earned 9 semester hours credit in the lower division courses in economics prior to beginning advanced work in the junior year. These lower division courses must be completed with an average grade of not less than "C." Economics 102 and 132 are normally taken in the junior year, since they provide a theoretical foundation for other economics courses.

Other courses in economics to meet the requirements of the major are to be selected with the aid of a faculty adviser. Business Administration courses that may count (courses which may count) as economics credit are B.A. 130, 131, 132, 134, 135, 164, and 184.

Economics majors enrolled in the College of Arts and Sciences must, of course, fulfill all of the specific requirements of that College; these include, for example, work in a foreign language and 12 semester hours of credit in natural science and mathematics.

Economics majors enrolled in the College of Business and Public Administration may elect to take a foreign language or, in lieu of foreign language, may take B.A. 10 and Geog. 15. All B.P.A. economics majors must take 6 semester hours of mathematics, but may substitute B.A. 20 and 21 (Accounting) for natural science.

Economics majors are free to choose electives in other colleges of the University and are encouraged to study broadly in the social sciences,

ECONOMICS

philosophy, mathematics, statistics, and accounting. Economics majors planning to do graduate work are advised to develop proficiency in mathematics through the calculus and in a foreign language.

An economics honors program is open to economics majors entering their junior year. Students must have an academic average of at least 3.0 to be eligible to apply for admittance to this program.

SUGGESTED STUDY PROGRAM FOR ECONOMICS MAJOR

	Semester	
	I	II
<i>Freshman Year</i>		
Speech 1—Public Speaking.....	..	3
Econ. 4—Economic Developments .....	3	..
Eng. 1, 2—Composition and American Literature.....	3	3
Math. 10, 11 or 18, 19.....	3-5	3-5
G. & P. 1—American Government <sup>1</sup> .....	3	..
Foreign Language or B.A. 10 Elective.....	3	3
A.S. 2, 3—Basic Air Science (men).....	2	2
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2
Physical Activities (men and women).....	1	1
Total.....	16-19	15-17
<i>Sophomore Year</i>		
Eng. 3, 4—Composition & World Literature.....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
Foreign Language or Geog. 15 and elective.....	3	3
Natural Science or B.A. 20, 21.....	3	3
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Physical Activities (men and women).....	1	1
Total.....	16	16
<i>Junior Year</i>		
Econ. 140—Money and Banking.....	3	..
Econ. 132—Advanced Economic Principles.....	3	..
Econ. 102—National Income Analysis.....	..	3
B.A. 130—Business Statistics II.....	..	3
Econ. 160—Labor Economics.....	3	..
Econ. 131—Comparative Economic Systems.....	..	3
Electives in Economics and other subjects <sup>2</sup> .....	6	6
Total.....	15	15

<sup>1</sup> See American Civilization Program, page 2.

<sup>2</sup> Normally these electives must be on the junior and senior level.



## ECONOMICS

<i>Senior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Econ. 148—International Economics.....	3	
Econ. 142—Public Finance and Taxation.....		3
Electives in Economics and other subjects <sup>2</sup> .....	12	12
Total.....	15	15

## ECONOMICS

*Professors:* DILLARD, CUMBERLAND, GRUCHY, O'CONNELL, SCHULTZE, AND ULMER.

*Associate Professors:* CHASE, GRAMLEY, KNIGHT, AND WONNACOTT.

*Assistant Professors:* BENNETT, DODGE, DORSEY, KOKAT.

*Instructors:* BAILEY, DAY, DIX, FUREY, HAMILTON, PUCKETT, WEINTRAUB.

*Lecturers:* HINRICHS, MEASDAY, SPIEGEL.

### ECON. 4. ECONOMIC DEVELOPMENTS. (3)

First and second semesters. Freshman requirement in business administration curriculums. An introduction to modern economic institutions—their origins, development, and present status. Commercial revolution, industrial revolution, and age of mass production. Emphasis on developments in England, Western Europe and the United States. (Dillard, Bennett, Staff.)

### ECON. 31, 32. PRINCIPLES OF ECONOMICS. (3, 3)

First and second semesters. Prerequisite, sophomore standing. Required in the business administration curriculums. In Econ. 31 basic concepts, the monetary system, the national accounts, national income analysis, and business cycles are introduced. In Econ. 32 emphasis is placed on price theory, distribution, international trade, and economic development. (Staff.)

### ECON. 37. FUNDAMENTALS OF ECONOMICS. (3)

First and second semesters. Not open to students who have credit in Econ. 31 and 32. Not open to freshmen or to B.P.A. students. A survey of the general principles underlying economic activity, analysis of leading economic problems in the modern world. This is the basic course in economics for the American Civilization Program for students who are unable to take the more complete course provided in Econ. 31 and 32. (Ulmer, Staff.)

### *For Graduates and Advanced Undergraduates*

### ECON. 102. NATIONAL INCOME ANALYSIS. (3)

First and second semesters. Prerequisite, Econ. 32. Required for economics majors. An analysis of national income accounts and the level of national income and employment. (Schultze, Kokat.)

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<sup>2</sup> Normally these electives must be on the junior-senior level.

## ECONOMICS

### ECON. 130. MATHEMATICAL ECONOMICS. (3)

First semester. Prerequisites, Econ. 102 and 132 and one year of mathematics. A course designed to enable economics majors to understand the simpler aspects of mathematical economics. Those parts of the calculus and algebra required for economic analysis will be presented. (Ulmer.)

### ECON. 131. COMPARATIVE ECONOMIC SYSTEMS. (3)

First and second semesters. Prerequisite, Econ. 32 or 37. An investigation of the theory and practice of various types of economic systems. The course begins with an examination and evaluation of the capitalistic system and is followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism. (Gruchy, Dodge.)

### ECON. 132. ADVANCED ECONOMIC PRINCIPLES. (3)

First and second semesters. Prerequisite, Econ. 32. Required for economics majors. This course is an analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition. (Knight, Staff.)

### ECON. 134. CONTEMPORARY ECONOMIC THOUGHT. (3)

Prerequisites, Econ. 32 and senior standing. Graduate students should take Econ. 232. A survey of recent trends in American, English, and Continental economic thought with special attention to the work of such economists as W. C. Mitchell, J. R. Commons, T. Veblen, W. Sombart, J. A. Hobson and other contributors to the development of economic thought since 1900. (Gruchy.)

### ECON. 137. THE ECONOMICS OF NATIONAL PLANNING. (3)

Prerequisite, Econ. 32 or 37 and senior standing. An analysis of the principles and practice of economic planning with special reference to the planning problems of Western European countries and the United States. (Gruchy.)

### ECON. 138. ECONOMICS OF THE SOVIET UNION. (3)

Second semester. Prerequisite, Econ. 32 or 37. An analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income. (Dodge.)

### ECON. 140. MONEY AND BANKING. (3)

First and second semesters. Prerequisite, Econ. 32 or 37. A study of the relation of money and credit to economic activity and prices; the impact of public policy in financial markets and in markets for goods and services; policies, structure, and functions of the Federal Reserve System; organization, operation, and functions of the commercial banking system, as related particularly to questions of economic stability and public policy. (Gramley and Staff.)

### ECON. 141. THEORY OF MONEY, PRICES AND ECONOMIC ACTIVITY. (3)

Second semester. Prerequisite, Econ. 140. A theoretical treatment of the influence of money and financial markets on economic activity and prices, and of the effects of monetary policy on the markets for goods and services; the role of money in the classical and Keynesian macro-systems; topics of theoretical interest in monetary policy formation and implementation. (Gramley.)

### ECON. 142. PUBLIC FINANCE AND TAXATION. (3)

First and second semesters. Prerequisite, Econ. 32 or 37. A study of govern-

ment fiscal policy with special emphasis upon sources of public revenue, the tax system, government budgets, and the public debt. (Chase, Hinrichs.)

**ECON. 147. BUSINESS CYCLES. (3)**

First semester. Prerequisite, Econ. 140. A study of the causes of depressions and unemployment, cyclical and secular instability, theories of business cycles, and the problem of controlling economic instability. (Schultze.)

**ECON. 148. INTERNATIONAL ECONOMICS. (3)**

First and second semesters. Prerequisite, Econ. 32 or 37. A descriptive and theoretical analysis of international trade; balance of payments accounts; the mechanism of international economic adjustment; comparative costs; economics of customs unions. (Wonnacott.)

**ECON. 149. INTERNATIONAL ECONOMIC POLICIES. (3)**

Second semester. Prerequisite, Econ. 148. Contemporary balance of payments problems; the international liquidity controversy; investment, trade and economic development; evaluation of arguments for protection. (Wonnacott.)

**ECON. 160. LABOR ECONOMICS. (3)**

First and second semesters. Prerequisite, Econ. 32 or 37. The historical development and chief characteristics of the American labor movement are first surveyed. Present-day problems are then examined in detail: wage theories, unemployment, social security, labor organization, and collective bargaining. (Knight, Dorsey, Measday.)

**ECON. 170. INDUSTRIAL ORGANIZATION. (3)**

Prerequisite, Econ. 32 or 37. Changing structure of the American economy; price policies in different industrial classifications of monopoly and competition in relation to problems of public policy.

**ECON. 171. ECONOMICS OF AMERICAN INDUSTRIES. (3)**

Second semester. Prerequisite, Econ. 32 or 37. A study of the technology, economics and geography of twenty representative American industries. (Clemens.)

**ECON. 196, 197. HONORS SEMINAR. (3, 3)**

First and second semesters. Normally taken in the junior year. Prerequisite, candidacy for honors in Economics. Selected topics are investigated, and written reports are submitted. (Gruchy.)

**ECON. 198. INDEPENDENT HONORS STUDY. (3)**

First semester. Normally taken in the senior year. Prerequisites, Economics 196, 197 and candidacy for honors in Economics. Integrated reading under staff direction, leading to the preparation of a thesis in Economics 199. (Staff)

**ECON. 199. HONORS THESIS. (3)**

Second semester. Prerequisites, Economics 198 and candidacy for honors in Economics. General supervision will be provided through assembled meetings with the professor in charge of the course. (Staff.)

*For Graduates*

**ECON. 200. MICRO-ECONOMIC ANALYSIS. (3)**

First semester. Prerequisite, Econ. 132. A critical analysis of the theory of economic decision-making in the firm, household and industry in perfect and

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imperfect competition; price, output, distribution, and the theory of general equilibrium. Review of recent contributions.

### ECON. 201. ADVANCED MICRO-ECONOMIC ANALYSIS. (3)

Second semester. Prerequisite, Econ. 200 or consent of instructor. A continuation of Econ. 200 with particular attention to recent developments in linear programming, game theory, activity analysis, welfare economics, input-output analysis, and micro-dynamic models. (Ulmer.)

### ECON. 202. MACRO-ECONOMIC ANALYSIS. (3)

Second semester. Prerequisite, Econ. 102 or equivalent. National income accounting; determination of national income and employment especially as related to the modern theory of effective demand; consumption function; multiplier and acceleration principles; the role of money as it affects output and employment as a whole; cyclical fluctuations. (Schultze.)

### ECON. 204. ORIGINS AND DEVELOPMENT OF CAPITALISM. (3)

Study of the transition from feudalism to capitalism and the subsequent development of leading capitalist institutions in industry, agriculture, commerce, banking, and the social movement. (Dillard.)

### ECON. 205. ECONOMIC DEVELOPMENT OF UNDERDEVELOPED AREAS. (3)

Principles and problems of economic development in underdeveloped areas; policies and techniques which hasten economic development.

### ECON. 206. SEMINAR IN ECONOMIC DEVELOPMENT. (3)

Prerequisite, Econ. 205 or consent of instructor. Problems and policies of economic development in specified underdeveloped areas.

### ECON. 207. MONEY AND FINANCE IN ECONOMIC DEVELOPMENT. (3)

### ECON. 210. ADVANCED MATHEMATICAL ECONOMICS. (3)

Second semester. Prerequisite, either one year of calculus or Econ. 130. Model-building and mathematical derivation of micro- and macro-economic theories; foundations of econometrics and activity analysis. Topics in differential and difference equations and in matrix algebra introduced as required. (Ulmer.)

### ECON. 230. HISTORY OF ECONOMIC THOUGHT. (3)

First semester. Prerequisite, Econ. 132 or consent of instructor. A study of the development of economic thought and theories including the Greeks, Romans, canonists, mercantilists, physiocrats, Adam Smith, Malthus, Ricardo. Relation of ideas to economic policy. (Dillard.)

### ECON. 231. ECONOMIC THEORY IN THE NINETEENTH CENTURY. (3)

Second semester. Prerequisite, Econ. 230 or consent of the instructor. A study of various nineteenth and twentieth century schools of economic thought, particularly the classicists, neo-classicists, Austrians, German historical school, American economic thought and the socialists. (Dillard.)

### ECON. 232, 233. SEMINAR IN INSTITUTIONAL ECONOMIC THEORY. (3, 3)

A study of the recent developments in the field of institutional economic theory in the United States and abroad. (Gruchy.)

### ECON. 234. ECONOMIC GROWTH IN MATURE ECONOMIES. (3)

Analysis of policies and problems for achieving stable economic growth in mature economies such the United States, the United Kingdom, and the Scandinavian countries. (Gruchy.)



**ECON. 235. ADVANCED INTERNATIONAL ECONOMICS. (3)**

First semester. General equilibrium and disequilibrium in the world economy; international mechanism and adjustment; price, exchange rate, and income changes. Commercial policy and the theory of customs unions. (Wonnacott.)

**ECON. 236. SEMINAR IN INTERNATIONAL ECONOMIC RELATIONS. (3)**

(Arranged.) A study of selected problems in International Economic Relations. (Wonnacott.)

**ECON. 237. SELECTED TOPICS IN ECONOMICS. (3)****ECON. 238. SEMINAR IN ECONOMIC DEVELOPMENT OF THE SOVIET UNION. (3)**

Prerequisite, Econ. 138 or consent of instructor. Measurement and evaluations of Soviet economic development including interpretation and use of Soviet statistics, measurement of national income and rates of growth, fiscal and monetary policies, investment policies and technological change, planning and economic administration, man power and wage policies, foreign trade and foreign aid policies, intra-Bloc relations, and selected topics in Bloc development. (Dodge.)

**ECON. 240. MONETARY THEORY AND POLICY. (3)**

First semester. An adequate knowledge of micro- and macro-economics is assumed. Theory of money, financial assets, and economic activity; review of classical, neo-classical and Keynesian contributions; emphasis on post-Keynesian contributions, including those of Tobin, Patinkin, Gurley-Shaw, Friedman, and others. (Gramley.)

**ECON. 241. SEMINAR IN MONETARY THEORY AND POLICY. (3)**

Second semester. Prerequisite, Econ. 240 or consent of instructor. Theory of the mechanisms through which central banking affects economic activity and prices; formation and implementation of monetary policy; theoretical topics in monetary policy. (Gramley.)

**ECON. 242. PUBLIC FINANCE AND FISCAL POLICY. (3)**

Prerequisite, Econ. 142 or consent of instructor. Taxation, public expenditures, and public debt; the use of fiscal policy as a stabilization device against inflation and recession. (Chase.)

**ECON. 247. ECONOMIC GROWTH AND INSTABILITY. (3)**

An analytical study of long-term economic growth in relation to short-term cyclical instability. Attention is concentrated on the connection between accumulation of capital and the capital requirements of secular growth and business cycles. Earlier writings as well as recent growth models are considered. (Schultze.)

**ECON. 248 THE ECONOMICS OF TECHNICAL CHANGE. (3)**

Prerequisite, consent of instructor. A study of the determinants and impact of inventions and innovations. Attention is given to the qualitative and quantitative aspects of technical change, both at the micro-economic and macro-economic levels, and under different conditions of economic development.

**ECON. 260. SEMINAR IN LABOR ECONOMICS. (3)**

Prerequisite, Econ. 160 or consent of instructor. Theories of wage determina-

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tion, including analysis of wage structures and wage-price spiral; organization of labor markets, including factors influencing labor mobility and unemployment. (Knight.)

ECON. 270. ADVANCED INDUSTRIAL ORGANIZATION. (3)  
(Arranged.)

ECON. 399. THESIS.  
(Arranged.)

## III. GEOGRAPHY

Geography embraces both physical and social science aspects, and in geographical research these two aspects are related constantly. The geographer studies man's physical environment — landforms, climate, nature and distribution of physical resources, etc.—and its relationships to man's major economic and other activities, particularly as they find expression in the landscape. He is especially interested in the regional diversity of the world in its various and changing patterns and the physical and socioeconomic causes which contribute to such diversity.

Thus a geographer should have a background in certain aspects of the physical and of the social sciences. This is reflected in both the undergraduate and graduate programs of study. First hand observation is also still of prime importance to the modern geographer, as it was to the old "scientific travel geographer," and parts of many types of geographical research work are carried out in the field. Therefore, a certain amount of training in field observation is essential for the geographer. Major tools in his work are air photographs and many different types of maps.

### REQUIREMENTS FOR AN UNDERGRADUATE MAJOR IN GEOGRAPHY

There are 3 different undergraduate programs in geography:

1. *The general program.* This program prepares a student for work as a geographer in Federal and State government, business and various kinds of teaching, and for later advanced work in geography.
2. *The urban geography program.* This program prepares a student for work as a geographer in State, County, Municipal and other planning agencies.
3. *The cartography program.* This program prepares a student for work as a cartographer in Federal and State government, planning and private business.

The curriculum for an undergraduate major in geography is designed to give the student an understanding of the geographic factors that play a

major role in creating differences between geographic regions and countries, and to show how such factors may affect economic, social, and political activities. The student will be taught the fundamentals of map making, field work, and geographic analysis. Special orientation toward the work of a geographer in urban and suburban planning or toward cartography is possible within the framework of the undergraduate major.

Openings for well trained geographers exist in many branches of the Federal government and of State governments, in planning agencies, in private business, and in high schools, colleges and universities. For the higher positions in government and planning, study toward an M.A. may be desirable. Colleges and universities generally require M.A. and Ph.D. degrees.

A student majoring in geography is required to complete satisfactorily 120 semester hours of work in addition to the required work in hygiene, and physical activities. A general average of at least "C" is required for graduation. Only courses in which the student receives a grade of "C" or above will be counted toward the major.

The specific requirements for the geography major are:

I. Geog. 10 and 11 (3, 3) or equivalent; Geog. 30 (3); Geog. 35 (3); Geog. 40 and 41 (3, 3); Geog. 170 (3) and 18 hours in other geography courses numbered 100 to 199, of which 6 hours must be in non-regional courses; a total of 39 hours in geography.

II. Social Sciences—G. & P. 1 (3); Econ. 31 and 32 (3, 3); H. 5, 6 (3, 3); Soc. 105 (3); a total of 18 semester hours.<sup>1</sup>

III. Natural Sciences—Botany 1 and 113 or 102 (4, 2 or 3); Agron. 114 or equivalent (4); Chem. 1 (4). Total of 14 (15) semester hours.

IV. English—Eng. 1 and 2 (3, 3) and 3, 4, (3, 3); Speech 7 (2); a total of 14 semester hours.

V. Foreign Language and Literature—12 semester hours in one language, unless an advanced course is taken.

VI. Air Science, hygiene, and physical activities. The present University requirement is 8 semester hours in air science and physical activities for male students. Women students are required to take 8 semester hours credit in hygiene and physical activities.

A student who elects geography as a major must have earned eighteen semester hours credit in the prerequisite courses in geography prior to beginning the advanced work of the junior year. These are normally taken during the freshman and sophomore years. Only courses in which the student receives a grade of "C" or above will be counted toward the major.

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<sup>1</sup> See American Civilization Program, page 2.

## GEOGRAPHY

A minor in geography should consist of Geog. 10 (3), Geog. 30 (3), Geog. 40 (3) and such other courses as the major adviser deems suitable.

The specific courses comprising the student's program of studies should be selected with the aid of a faculty adviser from the Department of Geography in terms of the student's objective and major interest. Attention is directed to requirements under the American Civilization Program.

## STUDY PROGRAM FOR GEOGRAPHY MAJORS

	Semester	
	I	II
<i>Freshman Year</i>		
Geog. 10, 11—General Geography	3	3
Chem. 1—General Chemistry	4	
Bot. 1—General Botany		4
Speech 7—Public Speaking		2
G. & P. 1—American Government <sup>1</sup>	3	
Eng. 1, 2—Composition and American Literature	3	3
Foreign Language	3	3
A.S. 2, 3—Basic Air Science (men)	2	2
Hea. 2—Personal Health (women)	2	
Hea. 4—Community Health (women)		2
Physical Activities (men and women)	1	1
Total	19	18
<i>Sophomore Year</i>		
Geog. 30—Principles of Morphology	3	
Geog. 35—Map Reading and Interpretation		3
Geog. 40—Principles of Meteorology	3	
Geog. 41—Introductory Climatology		3
H. 5, 6—History of American Civilization	3	3
Eng. 3, 4—Composition and World Literature	3	3
Foreign Language	3	3
Physical Activities (men and women)	1	1
Total	16	16
<i>Junior Year</i>		
Bot. 113—Plant Geography	2	
Agron. 114—Soil Classification and Geography		4
Soc. 105—Cultural Anthropology		3
Econ. 31, 32—Principles of Economics	3	3
Geog.—Selection to fit student's needs	6	3
Electives, with adviser's consent	6	3
Total	17	16

<sup>1</sup> See American Civilization Program, page 2.



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<i>Senior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Geog. 170—Local Field Course.....	3	
Geog. 199—Thesis Research for undergraduate majors in geography.....	..	3
Geog.—Selection to fit student's needs.....	6	3
Electives, with adviser's consent.....	6	3
Total.....	15	9

## SUGGESTED STUDY PROGRAM FOR URBAN GEOGRAPHY

In recent years there has been an increased demand in the field of Urban and Suburban Planning for *persons with basic preparation in Geography*, including work in cartography and urban geography, and with supporting preparation in Business Administration, Economics, Government and Politics, and Sociology. The following program has been organized in response to this demand, and in consultation with leading members of planning organizations in this part of the country. The program corresponds closely to the general geography major, but most elective hours are assigned to specific courses.

Attention is drawn to the fact that for this course of study no foreign language is required, but that persons wishing to pursue later a course toward the M.A. degree in geography must at that time offer 12 credit hours of an approved foreign language, or pass an examination.

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Geog. 10, 11—General Geography.....	3	3
Geog. 30—Principles of Morphology .....	3	..
Geog. 35—Map Reading and Interpretation.....	..	3
Chem. 1—General Chemistry .....	4	..
Bot. 1—General Botany .....	..	4
G. & P. 1—American Government.....	3	..
Soc. 1—Sociology of American Life.....	..	3
Eng. 1, 2—Composition and American Literature.....	3	3
A. S. 2, 3—Basic Air Science (men).....	2	2
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women) .....	..	2
Physical Activities (men and women).....	1	1
Total.....	19	19

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	Semester	
	I	II
<i>Sophomore Year</i>		
Geog. 40—Principles of Meteorology .....	3	..
Geog. 41—Introductory Climatology .....	..	3
Econ. 31, 32—Principles of Economics .....	3	3
Hist. 5, 6—History of American Civilization .....	3	3
Soc. 13—Rural Sociology .....	3	..
Soc. 14—Urban Sociology .....	..	3
Eng. 3, 4—Composition and World Literature .....	3	3
Speech 7—Public Speaking .....	..	2
Physical Activities (men and women) .....	1	1
Total .....	16	18
<i>Junior Year</i>		
Geog. 100—Regional Geography of Eastern Anglo-America .....	..	3
Geog. 152—Problems and Practices of Photo Interpretation .....	3	..
Geog. 195—Geography of Transportation .....	..	3
Geog. 197—Urban Geography .....	3	..
Agron. 114—Soil Classification and Geography .....	..	4
B. A. 130—Business Statistics I .....	3	..
Econ. 142—Public Finance and Taxation .....	3	..
B.A. 176—Urban Transport and Urban Development .....	..	3
Soc. 121—Population .....	3	..
Electives, with adviser's consent .....	..	2
Total .....	15	15
<i>Senior Year</i>		
Geog. 154, 155—General Cartography and Graphics .....	3	3
Geog. 170—Local Field Course .....	3	..
B. A. 195—Real Estate Principles .....	3	..
G. & P. 161—Metropolitan Administration .....	3	..
Soc. 114—The City .....	3	..
Geog. 199—Thesis Research for undergraduate majors in geography .....	..	3
Electives, with adviser's consent .....	..	5
Total .....	15	11

Electives during the Junior and Senior years should be chosen from among the following courses: Geog. 160—Advanced Economic Geography I. Agricultural Resources (3); Geog. 161—Advanced Economic Geography II. Mineral Resources (3); Geog. 198—Topical Investigations (1-3); B.A. 170—Transportation Services and Regulations (3); B.A. 184—Public Utilities (3); B.A. 180, 181—Business Law (4, 4); Econ. 150—Marketing Principles and Organization (3); Econ. 171—Economics of American Industries (3); Econ. 137—The Economics of National Planning (3); G. & P. 112—Public Financial Administration (3); G. & P. 181—Administrative Law (3); Soc. 112—Rural-Urban Relations (3); Soc. 115—Industrial Sociology (3); Soc. 183—Social Statistics (3).

## SUGGESTED STUDY PROGRAM FOR CARTOGRAPHY

There is a steady demand from Federal government, local government, planning agencies, and private firms for well trained geographic cartographers. A good geographic cartographer should understand the principles of geography and geographic research, as much cartographic work deals with the research that is necessary even before the first sketch of a map can be made. He should understand the principles and some of the problems of modern map making, general graphic presentation, and methods of reproduction; he should be able to do satisfactory cartographic drafting. The suggested program is essentially similar to that for the undergraduate major except that students specializing in the cartographic side of geography may, with the consent of the Senior Adviser, enroll for Econ. 37 (3) instead of Econ. 31 and 32 (3, 3). Moreover, the Senior Adviser may also release such students from the requirement to take Soc. 105.

The student should take as many of the courses from Geog. 150 to and including Geog. 155 as are available during his upper classman years. Courses outside of geography, which can be expected to be most useful to his future cartography career, should be chosen in consultation with the Senior Adviser.

## GEOGRAPHY

*Professors:* VAN ROYEN, HU.

*Consulting Professor:* ROTERUS.

*Lecturer with rank of Professor:* LEMONS.

*Lecturers:* VAN BERGEN VAN DER GRIJP, GORDON, WHITEMAN.

*Associate Professors:* AHNERT, CHAVES AND DESHLER.

*Assistant Professors:* ANDERSON, MIKA, SCHMIEDER, WIEDEL.

*Research Associate:* MORYADAS.

*Research Assistants:* KINERNEY, KOLBO, KORCELLI.

## GEOG. 10, 11. GENERAL GEOGRAPHY. (3, 3)

First and second semesters. Geog. 10 is suggested for students of Arts and Sciences, Education and those who desire a preparation for further study in geography. It also will serve as a preparation for the regional studies. Geog. 10 and 11 are required of all majors in geography and are recommended for minors. First part: an introduction to the various subdivisions of geography, to the nature and use of maps, to major principles and basic terminology. Second part: a study of the philosophy, techniques, aspects of literature and applications of geography. (Deshler and others.)

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### GEOG. 15. INTRODUCTORY ECONOMIC GEOGRAPHY. (3)

First and second semesters. Two lectures and one two-hour laboratory period per week. A study of physical and economic factors that underlie production. The roles of climate, soils, and landforms; the nature and geographic distribution of agricultural, power and mineral resources, and the nature and uses of cartographic materials. (Staff.)

### GEOG. 20, 21. ECONOMIC GEOGRAPHY. (3, 3)

(Not offered on College Park campus.)

### GEOG. 30. PRINCIPLES OF MORPHOLOGY. (3)

First semester. A study of the physical features of the earth's surface and their geographic distribution, including subordinate land forms. Major morphological processes, the development of land forms, and the relationships between various types of land forms and land use problems. (Ahnert.)

### GEOG. 35. MAP INTERPRETATION AND MAP PROBLEMS. (3)

First and second semesters. Interpretation of land forms and man-made features on American and foreign maps. Functions, use, and limitations of various types of maps, with emphasis upon topographic maps. Problems of use and interpretation. (Ahnert.)

### GEOG. 40. PRINCIPLES OF METEOROLOGY. (3)

First and second semesters. An introductory study of the weather. Properties and conditions of the atmosphere, and methods of measurement. The atmospheric circulation and conditions responsible for various types of weather and their geographic distribution patterns. Practical applications. (Chaves.)

### GEOG. 41. INTRODUCTORY CLIMATOLOGY. (3)

Second semester. Prerequisite, Geog. 40, or permission of the instructor. Climatic elements and their controls, the classification and distribution of world climates and relevance of climatic differences to human activities. (Chaves.)

### *For Graduates and Advanced Undergraduates*

### GEOG. 100. REGIONAL GEOGRAPHY OF EASTERN ANGLO-AMERICA. (3)

Prerequisite, Geog. 10 or Geog. 15, or permission of the instructor. A study of the cultural and economic geography and the geographic regions of eastern United States and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background. (Mika.)

### GEOG. 101. REGIONAL GEOGRAPHY OF WESTERN ANGLO-AMERICA. (3)

Prerequisite, Geog. 10 or Geog. 15, or permission of the instructor. A study of western United States, western Canada, and Alaska along the lines mentioned under Geog. 100. (Mika.)

### GEOG. 103. GEOGRAPHIC CONCEPTS AND SOURCE MATERIALS. (3)

A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.



**GEOG. 104. GEOGRAPHY OF MAJOR WORLD REGIONS. (3)**

A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the Far East, and Latin America. Emphasis upon the causal factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

**GEOG. 105. GEOGRAPHY OF MARYLAND AND ADJACENT AREAS. (3)**

An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the state of Maryland and adjacent areas.

**GEOG. 110. ECONOMIC AND CULTURAL GEOGRAPHY OF CARIBBEAN AMERICA. (3)**

An analysis of the physical framework, broad economic and historical trends, cultural patterns, and regional diversification of Mexico, Central America, the West Indies, and parts of Colombia and Venezuela. (Chaves.)

**GEOG. 111. ECONOMIC AND CULTURAL GEOGRAPHY OF SOUTH AMERICA. (3)**

A survey of natural environment and resources, economic development and cultural diversity of the South American republics, with emphasis upon problems and prospects of the countries. (Chaves.)

**GEOG. 120. GEOGRAPHY OF EUROPE. (3)**

First and second semesters. Agricultural and industrial development of Europe and present-day problems in relation to the physical and cultural setting of the continent and its natural resources. (Van Royen, Ahnert.)

**GEOG. 122. ECONOMIC RESOURCES AND DEVELOPMENT OF AFRICA. (3)**

The natural resources of Africa in relation to agricultural and mineral production; the various stages of economic development and the potentialities of the future. (Deshler.)

**GEOG. 123. PROBLEMS OF COLONIAL GEOGRAPHY. (3)**

Problems of development of colonial areas, with special emphasis upon the development of tropical regions and the possibilities of white settlement in the tropics.

**GEOG. 125. GEOGRAPHY OF ASIA. (3)**

Lands, climates, natural resources and major economic activities in Asia (except Soviet Asia). Outstanding differences between major regions. (Hu.)

**GEOG. 130. ECONOMIC AND POLITICAL GEOGRAPHY OF EASTERN ASIA. (3)**

Study of China, Korea, Japan, the Philippines; physical geographic setting; population; economic and political geography. Potentialities of major regions and recent developments. (Hu.)

**GEOG. 131. ECONOMIC AND POLITICAL GEOGRAPHY OF SOUTH AND SOUTHEAST ASIA. (3)**

Study of the Indian subcontinent, Farther India, Indonesia; physical geographic setting; population; economic and political geography. Potentialities of various countries and regions and their role in present Asia. (Hu.)

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### GEOG. 134. CULTURAL GEOGRAPHY OF CHINA AND JAPAN. (3)

Survey of geographical distribution and interpretation of cultural patterns of China and Japan. Emphasis on basic cultural institutions, outlook on life, unique characteristics of various groups. Trends of cultural change and contemporary problems. (Hu.)

### GEOG. 140. GEOGRAPHY OF THE SOVIET UNION. (3)

The natural environment and its regional diversity. Geographic factors in the expansion of the Russian state. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population. (Anderson.)

### GEOG. 146. REGIONAL GEOMORPHOLOGY. (3)

Regional and comparative morphology, with special emphasis upon Anglo-America. (Ahnert.)

### GEOG. 150. HISTORY AND THEORY OF CARTOGRAPHY. (3)

The development of maps throughout history. Geographical orientation, coordinates, and map scales. Map projections, their nature, use and limitations. Principles of representation of features on physical and cultural maps. Modern uses of maps and relationships between characteristics of maps and use types. (van Bergen van der Grijp.)

### GEOG. 151, 152. CARTOGRAPHY AND GRAPHICS PRACTICUM. (3, 3)

First and second semesters. One hour lecture and two two-hour laboratory periods a week. Techniques and problems of compilation, design, and construction of various types of maps and graphs. Relationships between map making and modern methods of production and reproduction. Trips to representative plants. Laboratory work directed toward cartographic problems encountered in the making of nontopographic maps. (Wiedel.)

### GEOG. 153. PROBLEMS OF CARTOGRAPHIC REPRESENTATION AND PROCEDURE. (3)

Two hours lecture and two hours laboratory a week. Study of cartographic compilation methods. Principles and problems of symbolization, classification, and representation of map data. Problems of representation of features at different scales and for different purposes. Place-name selection and lettering; stick-up and map composition. (van Bergen van der Grijp.)

### GEOG. 154. PROBLEMS OF MAP EVALUATION. (3)

Two hours lecture and two hours laboratory a week. Schools of topographic concepts and practices. Theoretical and practical means of determining map reliability, map utility, and source materials. Nature, status, and problems of topographic mapping in different parts of the world. Non-topographic special use maps. Criteria of usefulness for purposes concerned and of reliability. (Wiedel.)

### GEOG. 155. PROBLEMS AND PRACTICES OF PHOTO INTERPRETATION. (3)

Two hours of lecture and two hours of laboratory per week. Interpretation of aerial photographs with emphasis on the recognition of landforms of different types and man-made features. Study of vegetation, soil, and other data that may be derived from aerial photographs. Types of aerial photographs and limitations of photo interpretation. (Ahnert.)

**GEOG. 160. ADVANCED ECONOMIC GEOGRAPHY I. AGRICULTURAL RESOURCES. (3)**

First semester, alternate years. Prerequisite, Geog. 10 or Geog. 15. The nature of agricultural resources, the major types of agricultural exploitation in the world, and the geographic distribution of certain major crops and animals in relation to physical environment and economic geographic conditions. Main problems of conservation. (Van Royen.)

**GEOG. 161. ADVANCED ECONOMIC GEOGRAPHY II. MINERAL RESOURCES. (3)**

First semester, alternate years. Prerequisite, Geog. 10 or Geog. 15. The nature and geographic distribution of the principal power, metallic and other minerals. Economic geographic aspects of modes of exploitation. Consequences of geographic distribution and problems of conservation. (Van Royen.)

**GEOG. 170. LOCAL FIELD COURSE. (3)**

First semester. Training in geographic field methods and techniques. Field observation of land use in selected rural and urban areas in eastern Maryland. One lecture per week with Saturday and occasional weekend field trips. Primarily for undergraduates. (Ahnert.)

**GEOG. 180. SCIENTIFIC METHODOLOGY AND HISTORY OF GEOGRAPHY. (3)**

First semester. For undergraduate and graduate majors in Geography. May be taken also by students with a minimum of 9 hours in systematic and 6 hours in regional geography. A comprehensive and systematic study of the history, nature, and basic principles of geography, with special reference to the major schools of geographic thought; a critical evaluation of some of the important geographical works and methods of geographic research. (Hu.)

**GEOG. 190. POLITICAL GEOGRAPHY. (3)**

Geographical factors in national power and international relations; an analysis of the role of "geopolitics" and "geostrategy," with special reference to the current world scene. (Chaves.)

**GEOG. 195. GEOGRAPHY OF TRANSPORTATION. (3)**

The distribution of transport routes on the earth's surface; patterns of transport routes; the adjustment of transport routes and media to conditions of the natural environment centers and their distribution. (Mika.)

**GEOG. 197. URBAN GEOGRAPHY. (3)**

Origins of cities, followed by a study of elements of site and location with reference to cities. The patterns and functions of some major world cities will be analyzed. Theories of land use differentiation within cities will be appraised. (Mika.)

**GEOG. 198. TOPICAL INVESTIGATIONS. (1-3)**

First and second semesters. Independent study under individual guidance. Restricted to advanced undergraduate students with credit for at least 24 hours in geography, and to graduate students. Any exception should have the approval of the Head of the Department. (Staff.)

**GEOG. 199. UNDERGRADUATE THESIS RESEARCH. (3)**

Directed regional or systematic study involving several subfields of geography,

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including cartographic presentation, and usually requiring field work; and leading to an undergraduate thesis. (Limited to undergraduate majors in geography). (Hu.)

### *For Graduates*

#### GEOG. 200. FIELD COURSE. (3)

Field work in September, conferences and reports during first semester. Practical experience in conducting geographic field studies. Intensive training in field methods and techniques and in the preparation of reports. For graduate students in geography. Open to other students by special permission of the Head of the Department of Geography. (Staff.)

#### GEOG. 210, 211. SEMINAR IN THE GEOGRAPHY OF LATIN AMERICA. (3, 3)

First and second semesters. Prerequisite, Geog. 110, 111 or consent of instructor. An analysis of recent changes and trends in industrial development, exploitation of mineral resources, and land utilization. (Chaves.)

#### GEOG. 220, 221. SEMINAR IN THE GEOGRAPHY OF EUROPE AND AFRICA. (3, 3)

First and second semesters. Prerequisite, Geog. 120 or 122, or consent of instructor. Analysis of special problems concerning the resources and development of Europe and Africa. (Van Royen, Deshler.)

#### GEOG. 230, 231. SEMINAR IN THE GEOGRAPHY OF EAST ASIA. (3, 3)

First and second semesters. Analysis of problems concerning the geography of East Asia with emphasis on special research methods and techniques applicable to the problems of this area. (Hu.)

#### GEOG. 240, 241. SEMINAR IN THE GEOGRAPHY OF THE U.S.S.R. (3, 3)

First and second semesters. Investigation of special aspects of Soviet geography. Emphasis on the use of Soviet materials. Prerequisite, reading knowledge of Russian and Geog. 140, or consent of instructor. (Anderson.)

#### GEOG. 246. SEMINAR IN THE GEOGRAPHY OF THE NEAR EAST. (3)

First and second semesters.

#### GEOG. 250. SEMINAR IN CARTOGRAPHY. (Credit arranged)

First or second semester. The historical and mathematical background of cartographic concepts, practices, and problems, and the various philosophical and practical approaches to cartography. Discussions will be supplemented by the presentation of specific cartographic problems investigated by the students. (van Bergen van der Grijp.)

#### GEOG. 260. ADVANCED GENERAL CLIMATOLOGY. (3)

First semester. Prerequisite, Geog. 41, or consent of instructor. Advanced study of elements and controls of the earth's climates. Principles of climatic classification. Special analysis of certain climatic types. (Lemons.)

#### GEOG. 261. APPLIED CLIMATOLOGY. (3)

Second semester. Prerequisite, Geog. 41, or consent of instructor. Study of principles, techniques, and data of micro-climatology, physical and regional



## GOVERNMENT AND POLITICS

climatology relating to such problems and fields as transportation, agriculture, industry, urban planning, human comfort, and regional geographic analysis.  
(Lemons.)

GEOG. 262, 263. SEMINAR IN METEOROLOGY AND CLIMATOLOGY. (3, 3)  
First and second semesters. Prerequisite, consent of instructor. Selected topics in meteorology and climatology chosen to fit the individual needs of advanced students.  
(Lemons.)

GEOG. 280. GEOMORPHOLOGY. (3)  
Second semester. An advanced comparative study of selected geomorphic processes and land forms; theories of land forms evolution and geomorphological problems.  
(Van Royen.)

GEOG. 290, 291. SELECTED TOPICS IN GEOGRAPHY. (1-3)  
First and second semesters. Readings and discussion on selected topics in the field of geography. To be taken only with joint consent of adviser and Head of the Department of Geography.  
(Staff.)

GEOG. 399. DISSERTATION RESEARCH. (Credit to be arranged)  
First and second semesters and summer.  
(Staff.)

## IV. GOVERNMENT AND POLITICS

The Department of Government and Politics offers programs designed to prepare students for government service, politics, foreign assignments, and intelligent and purposeful citizenship.

Business and Public Administration students may major in Government and Politics. At the Junior/Senior level they may pursue the general G. & P. curriculum or they may pursue a more specialized curriculum either in International Affairs or in Public Administration.

Government and Politics majors must take a minimum of 36 semester hours in G. & P. courses and may not count more than 42 hours in G. & P. toward graduation. No course in which the grade is less than "C" may be counted as part of the major work.

The Government and Politics fields are as follows: (1) American Government and Politics; (2) Comparative Government; (3) International Affairs; (4) Political Theory; (5) Public Administration; (6) Public Law; and (7) Public Policy and Political Behavior.

All G. & P. majors are required to take G. & P. 1, 3, 20, and 141 or 142 (Political Theory). They must take one G. & P. course from three separate G. & P. fields exclusive of Political Theory; and in addition: (a) G. & P. majors (general) must take at least 15 G. & P. semester hours at the 100 level; (b) G. & P. majors taking the International Affairs curriculum must complete at least 15 semester hours at the 100 level in international affairs and comparative government courses, including G. & P. 101; (c) G. & P. majors taking the Public Administration curriculum must

GOVERNMENT AND POLITICS

complete at least 15 semester hours at the 100 level in public administration, including G. & P. 110.

All students majoring in G. & P. (general) or G. & P. with specialization in Public Administration must take a minimum of 12 semester hours in one foreign language. Students majoring in G. & P. with specialization in International Affairs must take a minimum of 12 semester hours in one foreign language *above the first year elementary course*. (The first year elementary requirement may be waived by high school credit or placement tests).

All students majoring in G. & P. must fulfill the requirements of a minor, which involves the completion of 18 semester hours from approved Departments other than G. & P. At least six of the 18 hours must be taken at the 100 level from a single Department. Students majoring in G. & P. with specialization in International Affairs may choose to take all minor courses either in geographical area studies or on a Departmental basis; geographical area minors may be chosen, with the consent of the departmental adviser, from the following: Africa, East Asia, Europe, Latin America, the Middle East, and the Soviet Union. G. & P. general majors and G. & P. majors specializing in Public Administration may not minor in geographical area studies.

FRESHMAN AND SOPHOMORE REQUIREMENTS

<i>Courses</i>	<i>Hours</i>
English 1, 2, 3, 4	12
Foreign Language (International Affairs students must have 12 foreign language credits above the first year elementary level.)	12
Math. 10, 11	6
Speech 1	3
History 5, 6 *	6
Psychol. 1; Sociology 1; or Phil. 1	3
G. & P. 1,* 3, 20	9
Econ. 31, 32	6
Electives	3
	<hr/> 60

\*See American Civilization Program, page 2. Students who are exempted from G. & P. 1 by University examinations may not take G. & P. 1 for credit.

All students must meet University requirements in Physical Education, Air Science, and Health.

## GOVERNMENT AND POLITICS

### JUNIOR AND SENIOR REQUIREMENTS FOR THE G. & P. GENERAL CURRICULUM

<i>Courses</i>	<i>Hours</i>
G. & P. 141 or 142 (Political Theory)	3
One course from each of three G. & P. fields exclusive of Political Theory	9
Additional 100-level G. & P. courses (May not all be taken in International Affairs/Comparative Government, or all in Public Administration)	15
Requirements for minor	18
Statistics	3
Electives recommended by adviser	12
	<hr/> 60

### JUNIOR AND SENIOR REQUIREMENTS FOR THE G. & P. INTERNATIONAL AFFAIRS CURRICULUM

<i>Courses</i>	<i>Hours</i>
G. & P. 141 or 142 Political Theory)	
One course from each of three G. & P. fields exclusive of Political Theory	9
Additional 100-level International Affairs and Comparative Government courses including G. & P. 101	15
Requirements for minor (Departmental <i>or</i> Geographical Area Studies)	18
Statistics	3
Electives recommended by adviser	12
	<hr/> 60

### JUNIOR AND SENIOR REQUIREMENTS FOR THE G. & P. PUBLIC ADMINISTRATION CURRICULUM

<i>Courses</i>	<i>Hours</i>
G. & P. 141 or 142 (Political Theory)	3
One course from each of three G. & P. fields exclusive of Political Theory	9
Additional 100-level Public Administration courses including G. & P. 110	15
Requirements for minor	18
Statistics	3
Electives recommended by adviser	12
	<hr/> 60

## GOVERNMENT AND POLITICS

## GOVERNMENT AND POLITICS

*Professors:* PLISCHKE, BURDETTE, DILLON, HARRISON AND STEINMEYER.

*Associate Professors:* ANDERSON, HATHORN AND McNELLY.

*Assistant Professors:* ALPERIN, BYRD, JACOBS AND O'DONNELL.

*Lecturers:* BARBER, BEALS, CONWAY, KELLY AND LARSON.

### G. & P. 1. AMERICAN GOVERNMENT. (3)

This course is designed as the basic course in government for the American Civilization Program, and it or its equivalent is a prerequisite to all other courses in the Department. It is a comprehensive study of governments in the United States—national, state, and local.

### G. & P. 3. PRINCIPLES OF GOVERNMENT AND POLITICS. (3)

A study of the basic principles and concepts of political science.

### G. & P. 20. INTRODUCTION TO POLITICAL BEHAVIOR. (3)

Prerequisite, G. & P. 1. Development, concepts, and techniques of the behavioral approach to political science. Comparison with traditional approaches.

### G. & P. 40. POLITICAL IDEOLOGIES. (3)

Prerequisite, G. & P. 1. A survey and analysis of the leading ideologies of the modern world, including anarchism, communism, socialism, fascism, nationalism, and democracy.

### G. & P. 60. STATE AND LOCAL GOVERNMENT. (3)

Prerequisite, G. & P. 1. A study of the functioning and problems of state and local government in the United States, with illustrations from Maryland jurisdictions.

### G. & P. 97. GOVERNMENTS AND POLITICS OF EUROPE. (3)

Prerequisite, G. & P. 1. A comparative study of the political systems of the United Kingdom, France, Germany, Italy, and other selected European countries.

### *For Graduates and Advanced Undergraduates*

### G. & P. 101. INTERNATIONAL POLITICAL RELATIONS. (3)

Prerequisite, G. & P. 1. A study of the major factors underlying international relations, the methods of conducting foreign relations, the foreign policies of the major powers, and the means of avoiding or alleviating international conflicts.

### G. & P. 102. INTERNATIONAL LAW. (3)

Prerequisite, G. & P. 1. A study of the basic character, general principles, and specific rules of international law, with emphasis on recent and contemporary trends in the field and its relation to other aspects of international affairs.

### G. & P. 103. CONTEMPORARY AFRICAN POLITICS. (3)

Prerequisite, G. & P. 1. A survey of contemporary developments in the domes-



tic and international politics of Africa, with special emphasis on the problems of national independence and the role of an emerging Africa in world affairs.

**G. & P. 104. INTER-AMERICAN RELATIONS. (3)**

Prerequisite, G. & P. 1. An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.

**G. & P. 105. RECENT FAR EASTERN POLITICS. (3)**

Prerequisite, G. & P. 1. The background and interpretation of recent political events in the Far East and their influence on world politics.

**G. & P. 106. AMERICAN FOREIGN RELATIONS. (3)**

Prerequisite, G. & P. 1. The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major foreign policies of the United States.

**G. & P. 108. INTERNATIONAL ORGANIZATION. (3)**

Prerequisite, G. & P. 1. A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations and such functional and regional organizations as the Organization of American States.

**G. & P. 109. FOREIGN POLICY OF THE U.S.S.R. (3)**

Prerequisite, G. & P. 1. A study of the development of the foreign policy of the Soviet Union, with attention paid to the forces and conditions that make for continuities and changes from Tsarist policies.

**G. & P. 110. PRINCIPLES OF PUBLIC ADMINISTRATION. (3)**

Prerequisite, G. & P. 1. A study of public administration in the United States, giving special attention to the principles of organization and management and to fiscal, personnel, planning, and public relations practices.

**G. & P. 111. PUBLIC PERSONNEL ADMINISTRATION. (3)**

Prerequisite, G. & P. 110 or B. A. 160. A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations, and retirement.

**G. & P. 112. PUBLIC FINANCIAL ADMINISTRATION. (3)**

Prerequisite, G. & P. 110 or Econ. 142. A survey of governmental financial procedures, including processes of current and capital budgeting, the administration of public borrowing, the techniques of public purchasing, and the machinery of control through pre-audit and post-audit.

**G. & P. 113. GOVERNMENTAL ORGANIZATION AND MANAGEMENT. (3)**

Prerequisite, G. & P. 110. A study of the theories of organization and management in American government with emphasis on new trends, experiments, and reorganizations.

**G. & P. 120. PROBLEMS IN POLITICAL BEHAVIOR. (3)**

Prerequisite, G. & P. 1. The problem approach to political behavior with emphasis on theoretical and empirical studies on selected aspects of the political process.

**G. & P. 124. LEGISLATURES AND LEGISLATION. (3)**

Prerequisite, G. & P. 1. A comprehensive study of legislative organization.

## GOVERNMENT AND POLITICS

procedure, and problems. The course includes opportunities for student contact with Congress and with the Legislature of Maryland.

- G. & P. 131. **INTRODUCTION TO CONSTITUTIONAL LAW.** (3)  
Prerequisite, G. & P. 1. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution.
- G. & P. 132. **CIVIL RIGHTS AND THE CONSTITUTION.** (3)  
Prerequisite, G. & P. 131. A study of civil rights in the American constitutional context, emphasizing freedom of religion, freedom of expression, minority discrimination, and the rights of defendants.
- G. & P. 133. **THE JUDICIAL PROCESS.** (3)  
Prerequisite, G. & P. 1. An examination of judicial organization in the United States at all levels of government, with some emphasis on legal reasoning, legal research, and court procedures.
- G. & P. 141. **HISTORY OF POLITICAL THEORY.** (3)  
Prerequisite, G. & P. 1. A survey of the principal political theories set forth in the works of writers from Plato to Bentham.
- G. & P. 142. **RECENT POLITICAL THEORY.** (3)  
Prerequisite, G. & P. 1. A study of 19th and 20th century political thought, with special emphasis on recent theories of socialism, communism, and fascism.
- G. & P. 144. **AMERICAN POLITICAL THEORY.** (3)  
Prerequisite, G. & P. 1. A study of the development and growth of American political concepts from the colonial period to the present.
- G. & P. 145. **RUSSIAN POLITICAL THOUGHT.** (3)  
Prerequisite, G. & P. 1. A survey and analysis of political ideas in Russia and the Soviet Union from early times to the present.
- G. & P. 154. **PROBLEMS OF WORLD POLITICS.** (3)  
Prerequisite, G. & P. 1. A study of governmental problems of international scope, such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.
- G. & P. 160. **STATE AND LOCAL ADMINISTRATION.** (3)  
Prerequisite, G. & P. 1. A study of the administrative structure, procedures, and policies of state and local governments with special emphasis on the state level and on intergovernmental relationships, and with illustrations from Maryland governmental arrangements.
- G. & P. 161. **METROPOLITAN ADMINISTRATION.** (3)  
Prerequisite, G. & P. 1. An examination of administrative problems relating to public services, planning, and coordination in a metropolitan environment.
- G. & P. 171. **PROBLEMS OF AMERICAN PUBLIC POLICY.** (3)  
Prerequisite, G. & P. 1. The background and interpretation of various factors which affect the formation and execution of American public policy.
- G. & P. 174. **POLITICAL PARTIES.** (3)  
Prerequisite, G. & P. 1. A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.

**G. & P. 178. PUBLIC OPINION. (3)**

Prerequisite, G. & P. 1. An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda, and pressure groups.

**G. & P. 181. ADMINISTRATIVE LAW. (3)**

Prerequisite, G. & P. 1. A study of the discretion exercised by administrative agencies, including analysis of their functions, their powers over persons and property, their procedures, and judicial sanctions and controls.

**G. & P. 191. GOVERNMENT AND ADMINISTRATION OF THE SOVIET UNION. (3)**

Prerequisite, G. & P. 1. A study of the adoption of the communist philosophy by the Soviet Union, of its governmental structure, and of the administration of government policy in the Soviet Union.

**G. & P. 192. GOVERNMENTS AND POLITICS OF LATIN AMERICA. (3)**

Prerequisite, G. & P. 1. A comparative study of the governmental systems and political processes of the Latin American countries, with special emphasis on Argentina, Brazil, Chile, and Mexico.

**G. & P. 193. GOVERNMENTS AND POLITICS OF ASIA. (3)**

Prerequisite, G. & P. 97, or G. & P. 105, or Hist. 61, or Hist. 62, or Hist. 187, or Hist. 188, or Hist. 189. A comparative study of the political systems of China, Japan, India, and other selected Asian countries.

*For Graduates*

**G. & P. 201. SEMINAR IN INTERNATIONAL POLITICAL ORGANIZATION. (3)**  
A study of the forms and functions of various international organizations.

**G. & P. 202. SEMINAR IN INTERNATIONAL LAW. (3)**  
Reports on selected topics assigned for individual study and reading in substantive and procedural international law.

**G. & P. 203. FUNCTIONAL PROBLEMS IN INTERNATIONAL RELATIONS. (3)**  
An examination of the major substantive issues in contemporary international relations, involving reports on selected topics based on individual research.

**G. & P. 204. AREA PROBLEMS IN INTERNATIONAL RELATIONS. (3)**  
An examination of problems in the relations of states within a particular geographic area, such as Europe, Asia and the Far East, Africa and the Middle East, and the Western Hemisphere. Individual reporting as assigned.

**G. & P. 205. SEMINAR IN AMERICAN POLITICAL INSTITUTIONS. (3)**  
Reports on topics assigned for individual study and reading in the background and development of American government.

**G. & P. 206. SEMINAR IN AMERICAN FOREIGN RELATIONS. (3)**  
Reports on selected topics assigned for individual study and reading in American foreign policy and the conduct of American foreign relations.

**G. & P. 207. SEMINAR IN COMPARATIVE GOVERNMENTAL INSTITUTIONS. (3)**  
Reports on selected topics assigned for individual study and reading in governmental and political institutions in governments throughout the world.

## GOVERNMENT AND POLITICS

### G. & P. 208. SEMINAR IN THE GOVERNMENT AND POLITICS OF EMERGING NATIONS. (3)

An examination of the programs of political development in the emerging nations with special reference to the newly independent nations of Asia and Africa and the less developed countries of Latin America. Individual reporting as assigned.

### G. & P. 209. SEMINAR IN INTERNATIONAL ADMINISTRATION. (3)

An analysis of the administrative aspects of international organizations with some attention given to program administration.

### G. & P. 211. SEMINAR IN FEDERAL-STATE RELATIONS. (3)

Reports on topics assigned for individual study and reading in the field of recent federal-state relations.

### G. & P. 213. PROBLEMS OF PUBLIC ADMINISTRATION. (3)

Reports on topics assigned for individual study and reading in the field of public administration.

### G. & P. 214. PROBLEMS OF PUBLIC PERSONNEL ADMINISTRATION. (3)

Reports on topics assigned for individual study and reading in the field of public personnel administration.

### G. & P. 215. PROBLEMS OF STATE AND LOCAL GOVERNMENT. (3)

Reports on topics assigned for individual study in the field of state and local government throughout the United States.

### G. & P. 216. GOVERNMENT ADMINISTRATIVE PLANNING AND MANAGEMENT. (3)

Reports on topics assigned for individual study and reading in administrative planning and management in government.

### G. & P. 218. SEMINAR IN URBAN ADMINISTRATION. (3)

Selected topics are examined by the team research method with students responsible for planning, field investigation, and report writing.

### G. & P. 221. SEMINAR IN PUBLIC OPINION. (3)

Reports on topics assigned for individual study and reading in the field of public opinion.

### G. & P. 223. SEMINAR IN LEGISLATURES AND LEGISLATION. (3)

Reports on topics assigned for individual study and reading about the composition and organization of legislatures and about the legislative process.

### G. & P. 224. SEMINAR IN POLITICAL PARTIES AND POLITICS. (3)

Reports on topics assigned for individual study and reading in the fields of political organization and action.

### G. & P. 225. MAN AND THE STATE. (3)

Prerequisite, G. & P. 142. Individual reading and reports on such recurring concepts in political theory as liberty, equality, justice, natural law and natural rights, private property, sovereignty, nationalism and the organic state.

### G. & P. 226. SCOPE AND METHOD OF POLITICAL SCIENCE. (3)

Required of all Ph.D. candidates. A seminar in the methodologies of political



## JOURNALISM AND PUBLIC RELATIONS

science, and their respective applications to different research fields. Inter-disciplinary approaches and bibliographical techniques are also reviewed.

- G. & P. 227. **ANALYTICAL SYSTEMS AND THEORY CONSTRUCTION.** (3)  
Prerequisite, G. & P. 226. Examination of the general theoretical tools available to political scientists and of the problems of theory building. Attention is given to communications theory, decision-making, game theory and other mathematical concepts, personality theory, role theory, structural-functional analysis, and current behavioral approaches.
- G. & P. 231. **SEMINAR IN PUBLIC LAW.** (3)  
Reports on topics assigned for individual study and reading in the fields of constitutional and administrative law.
- G. & P. 261. **PROBLEMS IN AMERICAN GOVERNMENT AND POLITICS.** (3)  
An examination of contemporary problems in various fields of government and politics in the United States, with reports on topics assigned for individual study.
- G. & P. 399. **THESIS RESEARCH.** (ARRANGED).

## V. JOURNALISM AND PUBLIC RELATIONS

The first objective of the Department of Journalism and Public Relations is to provide a four-year liberal education for the student of superior writing ability who intends to make a career in some phase of journalism. It also serves the major within the department whose career intention is in other fields. The department helps the non-major improve his writing or pursue special interests in journalism and public relations.

Both curricula—in editorial journalism and in public relations—have been accredited by the American Council on Education for Journalism. The department is a member of the American Association of Schools and Departments of Journalism and of the American Society of Journalism School Administrators.

Objectives of the department are (1) to give the student two concentrated years of general education, (2) to provide one year of technical and professional study and practice in editorial journalism or public relations, (3) to arrange one year of studies in an allied subject area that will serve as a background for the major, for further broadening of his general education, and as a special area of concentration in which he may write professionally, and (4) to cooperate with professional people and their organizations in journalism and in public relations.

The student's special area of concentration, 12 to 18 hours determined at the beginning of the junior year in cooperation with the student's adviser, is taken in the upper division. It should be selected on the basis of the student's interest and particular abilities.

## JOURNALISM AND PUBLIC RELATIONS

A student may declare his major in this department when he enrolls in it at the beginning of any semester, and ordinarily he will be advised from that time until graduation by the director of the sequence or major in the department. In no case, however, can one be graduated with a major in the department without having spent at least four semesters as a major in one of its curricula.

An average grade of "C" or better in courses taken in the department is required of editorial journalism and of public relations majors for graduation.

Majors are urged and helped to write for publication and obtain professional experience between the junior and senior years on the job or in summer internships.

The department maintains close working relations with professional journalists, public relations practitioners and their organizations. One of the purposes is to provide speakers, trips, laboratories, internships and other types of supervised professional training for students.

An essential part of the editorial journalism major's education consists of supervised training on the Baltimore Sunpapers or the Baltimore News-Post and nearby weekly newspapers. The experience may also be obtained on other publications, approved by the adviser. This professional training helps students to become familiar with reporting, editing and advertising for professional publications covering Maryland and Capitol Hill in Washington, D. C.

Similar supervised, professional training is provided for public relations majors in professional public relations offices.

Listed below are the two general curricula, editorial journalism and public relations. Each curriculum requires a minimum of 27 hours within the department, and not more than 37 hours within the department may be counted toward the 120 required for graduation with a bachelor's degree.

Course substitutions may be made by the sequence director to take account of previous professional experience and to develop programs to include special study in advertising, photojournalism, radio and television news, publications management, science and technical writing. Within the broad outlines of the upper-division courses themselves, students are encouraged to develop individual interests by careful choice of elective courses.

## JOURNALISM AND PUBLIC RELATIONS

### LOWER-DIVISION CURRICULUM (JOURNALISM, PUBLIC RELATIONS)

		Semester	
		I	II
<i>Freshman Year</i>			
English 1, 2—Composition and American Literature . . . . .		3	3
Two courses in Elective Group 1 . . . . .		3	3
Two courses in Elective Group A or *Math. 10, 11—			
Introduction to Mathematics . . . . .		3-4	3-4
Foreign language or two courses in Elective Group B . . . . .		3	..
G. & P. 1—American Government . . . . .		..	3
Speech 1—Public Speaking . . . . .		3	..
		15-16	15-16
<i>Elective Group 1</i>		<i>Elective Group A</i>	<i>Elective Group B</i>
Philosophy 1	3	Astronomy 1	3
Psychology 1	3	Geology 1	3
Sociology 1	3	Physics 1	3
		Botany 1	4
		Chemistry 1	4
		Zoology 1	4
		Business	
		Administration 10	3
		Economics 4	3
		Psychology 21	
		or Sociology 52	3
<i>Sophomore Year</i>			
English 3, 4—Composition and World Literature . . . . .		3	3
Foreign language (same as in freshman year) or			
two more courses in Elective Group B . . . . .		3	3
History 5, 6—History of American Civilization . . . . .		3	3
Econ. 31, 32—Principles of Economics . . . . .		3	3
Journ. 10—Introduction to Journalism and Journ. 11—			
News Reporting . . . . .		3	3
Total . . . . .		15	15

### EDITORIAL JOURNALISM STUDY PROGRAM

		Semester	
		I	II
<i>Junior Year</i>			
Journ. 160—News Editing . . . . .		3	..
Journ. 152—Advertising Copy and Layout or			
Journ. 163—Newspaper Typography . . . . .		..	3
Journ. 176—The Press and World Societies . . . . .		..	3
G. & P. 178—Public Opinion . . . . .		3	..
Special area of concentration . . . . .		3-6	3-6
Free electives . . . . .		3-6	3-6
Total . . . . .		15	15

\*Math 10 is minimum prerequisite for B.A. 130, Elements of Business Statistics, or another statistics course required of P.R. majors in upper division. Math. 11 also is helpful. The P.R. major who chooses science in the freshman year instead of Math. 10, 11 may take Math. 10 in place of the second course in Elective Group 1 and Math. 11 instead of Psych. 21 or Soc. 52 in Elective Group B.

JOURNALISM AND PUBLIC RELATIONS

SENIOR YEAR	Semester	
	I	II
Journ. 161—Advanced Editing .....	..	3
Journ. 165—Feature Writing or Journ. 175—Advanced Reporting .....	3	..
Journ. 191—Law of the Press .....	..	3
Journ. 192—History of American Journalism	3	..
Phil. 130—Conflict of Ideals in Western Civilization or Phil. 154—Political and Social Philosophy	..	3
Special area of concentration	3-6	3
Free electives .....	3-6	3
Total .....	15	15

PUBLIC RELATIONS STUDY PROGRAM

JUNIOR YEAR	Semester	
	I	II
Journ. 160—News Editing	3	..
Journ. 165—Feature Writing	..	3
P.R. 166—Public Relations .....	3	..
Journ. 181—Press Photography or Journ. 184—Picture Editing	3-2	..
G. & P. 178—Public Opinion .....	..	3
B.A. 130 or Psych. 90 or Soc. 183 .....	..	3
Special area of concentration	3	3
Free electives .....	3-4	3
Total .....	15	15

SENIOR YEAR	Semester	
	I	II
P.R. 170—Publicity Techniques	3	..
P.R. 171—Industrial Journalism or P.R. 186—P.R. of Government	..	3
P.R. 194—P.R. Cases and Research	3	..
Phil. 130—Conflict of Ideals in Western Civilization or Phil. 154—Political and Social Philosophy	..	3
Special area of concentration	3-6	3
Free electives .....	3-6	6
Total .....	15	15



## JOURNALISM AND PUBLIC RELATIONS

*Professors:* CROWELL, NEWSOM.

*Associate Professors:* BRYAN, VINOCOUR.

*Assistant Professors:* BEDFORD, NOALL.

*Lecturer:* HOGAN.

## JOURNALISM COURSES

### JOURN. 10. INTRODUCTION TO JOURNALISM. (3)

Survey of journalism, professional careers in writing and communications, news writing in laboratory. Prerequisites, at least average grade of "C" in Eng. 1 and 2 or 21; ability to type at least 40 words per minute. Laboratory fee, \$3.00.

### JOURN. 11. NEWS REPORTING. (3)

News reporting, campus news beat in laboratory. Laboratory fee, \$3.00.

### JOURN. 101. RADIO NEWS REPORTING. (2)

Theory and practice in radio news reporting. Laboratory fee, \$3.00.

### JOURN. 152. ADVERTISING COPY AND LAYOUT. (3)

Theory and practice in advertising copy and layout, with emphasis on newspaper advertising, for letterpress and photo-offset printing. Use of illustrations, type selection, copy-fitting, media selection.

### JOURN. 160. NEWS EDITING. (3)

Copy editing, headline writing, newspaper page layout. Laboratory fee, \$3.00.

### JOURN. 161. ADVANCED EDITING. (3)

Includes one afternoon a week of supervised work on Baltimore Sun or Baltimore News-Post desk, arranged. Prerequisite, J. 160, consent of instructor. Headline writing, rewriting, copy editing, makeup. A seminar for J. seniors in newsroom problems and policies emphasizing ethics and responsibilities.

### JOURN. 163. NEWSPAPER TYPOGRAPHY. (3)

Introduction to newspaper typography, printing and reproduction processes, type recognition, uses and harmony, practice in laying out and making up advertisements and newspaper pages.

### JOURN. 165. FEATURE WRITING. (3)

Writing and selling of newspaper and magazine articles.

### JOURN. 173. SCHOLASTIC JOURNALISM. (3)

Introduction to theory and practice in production of high school publications, for scholastic publications advisers.

### JOURN. 175. ADVANCED REPORTING. (3)

Includes one weekday morning on regular beat for Baltimore Sun, Baltimore News-Post or weekly newspaper; supervised, professional reporting on city, county, federal beats. Prerequisite, Journ. 11, consent of instructor.

## JOURNALISM AND PUBLIC RELATIONS

### JOURN. 176. THE PRESS AND WORLD SOCIETIES. (3)

Survey of history and status of news press throughout the world, role of the press in various societies, responsibilities of the press.

### JOURN. 181. PRESS PHOTOGRAPHY. (3)

Introduction to fundamentals of shooting, developing, printing of news and feature pictures. Equipment furnished by the department. Student furnishes own supplies. Laboratory fee, \$6.00.

### JOURN. 182. ADVANCED PRESS PHOTOGRAPHY. (3)

Emphasis on the picture story. Equipment provided by the department. Student furnishes his own supplies.

### JOURN. 184. PICTURE EDITING. (2)

Theory and practice in use of pictures for the press; impact of persuasion in photojournalism.

### JOURN. 191. LAW OF THE PRESS. (3)

Non-legal introduction to libel, right of privacy, fair comment and criticism, privilege, contempt of court by publication, Maryland press statutes.

### JOURN. 192. HISTORY OF AMERICAN JOURNALISM. (3)

History of American journalism and its influences on political, social and cultural institutions.

### JOURN. 196. PROBLEMS IN JOURNALISM. (1 or 2)

Group and individual projects in problems in journalism.

### JOURN. 197S. SUPERVISED INTERNSHIP. (0)

Summer session. To be taken following junior year as major in this department, permission of instructor. Ten weeks of organized, supervised study, experience, on-the-job training in journalism.

## PUBLIC RELATIONS COURSES

### P. R. 166. PUBLIC RELATIONS. (3)

Survey of public relations, principles, general orientation.

### P. R. 170. PUBLICITY TECHNIQUES. (3)

Strategy and techniques of publicity operations. Practice in use of major media of public communication; off-campus publicity projects.

### P. R. 171. INDUSTRIAL JOURNALISM. (3)

Industrial communications, management and production of company periodicals, public relations aspects of industrial journalism.

### P. R. 186. PUBLIC RELATIONS OF GOVERNMENT. (3)

Study of public relations, publicity, propaganda, information services in public administration of governments and international organizations.

### P. R. 194. PUBLIC RELATIONS CASES AND RESEARCH. (3)

Study of cases in public relations, policy formulation, strategy, ethics, research projects.

## OFFICE MANAGEMENT AND TECHNIQUES

### P. R. 197S. SUPERVISED INTERNSHIP. (0)

Summer session. To be taken after junior year as major in this department, upon permission of instructor. Ten weeks of organized, supervised study, experience, on-the-job training in public relations.

## VI. OFFICE MANAGEMENT AND TECHNIQUES

### 1. MANAGEMENT AND OFFICE AUTOMATION

As business administrators become increasingly dependent upon records of all types to control their business activities, clear channels of information and communication are increasingly difficult to establish and maintain. Astute management finds through office automation a valuable communicative tool in the planning, organizing, controlling, and coordinating of business data so that the objectives of an enterprise can be achieved most effectively. Consequently, today simplified data processing is becoming mandatory in private and public administration.

The student interested in this field should realize that his background education should include a broad understanding of business and administration in general. In addition, it is essential that the student develop the ability to analyze effectively the elements in an administrative situation while recognizing the functional needs of an organization. The program of studies in management and office automation is designed to meet the needs of students who wish to concentrate on developing managerial skills and competencies in data processing as they apply to the functional fields of finance, marketing, production, personnel and accounting. Because of the rapidly increasing developments in office automation in all types of business, the following curriculum will be a valuable aid in preparing for a career in this field of administration. Attention is directed to requirements under the American Civilization Program.

OFFICE MANAGEMENT AND TECHNIQUES

MANAGEMENT AND OFFICE AUTOMATION

	Semester	
	I	II
FRESHMAN YEAR		
Eng. 1, 2—Composition and American Literature .....	3	3
Math. 10, 11—Introduction to Mathematics .....	3	3
Speech 1—Public Speaking .....	3	..
Econ. 4—Economic Developments .....	..	3
B. A. 10—Introduction to Business .....	3	..
G. & P. 1—American Government <sup>1</sup> .....	..	3
H. 5, 6—History of American Civilization .....	3	3
A. S. 2, 3—Basic Air Science (men) .....	2	2
Hea. 2, 4—Personal and Community Health (women) .....	2	2
Physical Activities (men and women) .....	1	1
Total.....	18	18
SOPHOMORE YEAR		
Eng. 3, 4—Composition and World Literature .....	3	3
B. A. 20, 21—Principles of Accounting .....	3	3
Econ. 31, 32—Principles of Economics .....	3	3
Elect. Phil. 1, Psych. 1, or Soc. 1 .....	3	..
B. A. 14—Survey of Office Machines .....	..	2
Elect Math. 14 and 15, or Science .....	3	3
Physical Activities (men and women) .....	1	1
Elective .....	..	3
Total.....	16	18
JUNIOR YEAR		
B. A. 100—Office Operations and Management .....	3	..
B. A. 101—Electronic Data Processing .....	..	3
B. A. 112—Records Management .....	..	2
B. A. 121—Cost Accounting .....	..	4
B. A. 130—Business Statistics I .....	3	..
B. A. 140—Business Finance .....	3	..
B. A. 166—Business Communications .....	3	..
Elect 6 hours from Econ. 102, 132, 136 and 140 .....	3	3
Elective .....	..	3
Total.....	15	15
SENIOR YEAR		
B. A. 102—Electronic Data Processing Applications .....	3	..
B. A. 103—Introduction to Systems Analysis .....	..	3
B. A. 149—Marketing Principles and Organization .....	3	..
B. A. 168—Management and Organization Theory .....	3	..
B. A. 180—Business Law .....	3	..
B. A. 199—Business Policies .....	..	3
Electives .....	3	9
Total.....	15	15

<sup>1</sup> See American Civilization Program, page 2.



## 2. EXECUTIVE SECRETARIAL

This program will appeal to those who realize that positions in secretarial service require much more than office skills (typewriting and shorthand). This curriculum is designed primarily to prepare students for a secretarial career with administrative responsibilities. The development of the student's capacity to plan, organize, direct, and execute is the guiding principle followed in this curriculum. These are essential tools, but an understanding of management and a broad background in the humanities is important for the more responsible positions.

### PLACEMENT EXAMINATION

Students with previous training in shorthand and/or typewriting are required to take a placement examination in those subjects at the time of their first registration in a shorthand or typewriting course at the University.

If a student with previous training is unable to meet the prerequisite standard of achievement for the advanced course, he may change to a less advanced course with less than regular credit.

Credit will be given only for the work done in residence.

### RECORD OF COMPETENCY

Students must make a grade of "C" in each course in office techniques sequences, before they may progress to the next advanced course. A major earning less than a "C" grade in an advanced course is asked to repeat the course.

The following program of study is designed to develop potential aptitudes to an effective end. Attention is directed to requirements under the American Civilization Program.

### EXECUTIVE SECRETARIAL PROGRAM

FRESHMAN YEAR	Semester	
	I	II
Eng. 1, 2—Composition and American Literature . . . . .	3	3
G. & P. 1—American Government <sup>1</sup> . . . . .	3	..
B. A. 10—Introduction to Business . . . . .	..	3
Math. 10, 11—Introduction to Mathematics . . . . .	3	3
O. T. 1, 2—Principles and Intermediate Typewriting . . . . .	2	2
O. T. 12, 13—Principles of Shorthand I, II . . . . .	3	3
A S. 2, 3—Basic Air Science (men) . . . . .	2	2
Hea. 2, 4—Personal and Community Health (women) . . . . .	2	2
Physical Activities (men and women) . . . . .	1	1
Total . . . . .	17	17

<sup>1</sup> See American Civilization Program, page 2.

## OFFICE MANAGEMENT AND TECHNIQUES

	Semester	
	I	II
SOPHOMORE YEAR		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Econ. 31, 32—Principles of Economics .....	3	3
O. T. 17—Advanced Shorthand and Transcription .....	3	..
O. T. 19—Problems in Transcription .....	..	3
O. T. 10—Office Typewriting Problems .....	2	..
B. A. 14—Survey of Office Machines .....	2	..
Speech 1—Public Speaking .....	..	3
Physical Activities (men and women) .....	1	1
Total .....	17	16
JUNIOR YEAR		
B. A. 20, 21—Principles of Accounting .....	3	3
B. A. 100—Office Operations and Management .....	3	..
B. A. 101—Electronic Data Processing .....	..	3
B. A. 130—Business Statistics I .....	3	..
B. A. 140—Business Finance .....	..	3
B. A. 166—Business Communications .....	3	..
Electives .....	3	6
Total .....	15	15
SENIOR YEAR		
B. A. 149—Marketing Principles and Organization .....	3	..
B. A. 168—Management and Organization Theory .....	3	..
B. A. 180—Business Law .....	..	3
B. A. 199—Business Policies .....	..	3
O. T. 110—Administrative Secretarial Procedures .....	3	..
O. T. 114—Secretarial Office Practice .....	..	3
Elect 6 hours from Econ. 102, 132, 136 and 140 .....	3	3
Electives to complete 120 s.h. required for graduation .....	4	4
Total .....	16	16

## OFFICE MANAGEMENT AND TECHNIQUES

*Professor:* PATRICK.

*Assistant Professor:* EVERARD.

*Instructors:* ANDERSON, O'NEILL.

### O. T. 1. PRINCIPLES OF TYPEWRITING. (2)

Five periods per week. Prerequisite, consent of instructor. Laboratory fee, \$7.50. The goal of this course is the attainment of the ability to operate the typewriter continuously with reasonable speed and accuracy by the use of the "touch" system.

## BUREAU OF GOVERNMENTAL RESEARCH

### O. T. 2. INTERMEDIATE TYPEWRITING. (2)

Five periods per week. Prerequisite, minimum grade of "C" in O. T. 1 or consent of instructor. Laboratory fee, \$7.50. Drills for improving speed and accuracy and an introduction to office production typewriting. This course must be completed prior to enrollment in O. T. 17.

### O. T. 10. OFFICE TYPEWRITING PROBLEMS. (2)

Five periods per week. Prerequisite, minimum grade of "C" in O. T. 2 or consent of instructor. Laboratory fee, \$7.50. A course to develop the higher degree of accuracy and speed possible and to teach the advanced techniques of typewriting with special emphasis on production.

### O. T. 12, 13. PRINCIPLES OF SHORTHAND. (3, 3)

Prerequisite, consent of instructor. Five periods per week. This course aims to develop the mastery of the principles of Gregg Shorthand. In O. T. 13 special emphasis is placed on developing dictation speed.

### O. T. 17. ADVANCED SHORTHAND AND TRANSCRIPTION. (3)

Prerequisite, minimum grade of "C" in O. T. 2 and O. T. 13 or consent of instructor. Seven periods per week. Laboratory fee, per semester, \$7.50. Emphasis is placed on vocabulary development and new matter dictation for sustained speed at the highest level possible under varying conditions. Transcription is under timed conditions with emphasis on production involving quantity and quality of finished product.

### O. T. 19. PROBLEMS IN TRANSCRIPTION. (3)

Prerequisite, minimum grade of "C" in O. T. 17 or consent of instructor. Seven periods per week. Laboratory fee, per semester, \$7.50. A systematic development of recording skills under special and office-style dictation and transcription conditions with particular emphasis on transcriptional problems.

### O. T. 110. ADMINISTRATIVE SECRETARIAL PROCEDURES. (3)

Prerequisite, O. T. 18 and 19 or consent of the instructor. The nature of office work, the secretary's function in communication, inter-company and public relations, handling records, supplies and equipment; and in direction of the office staff. Standardization and simplification of office forms and procedures in relation to correspondence, mailing, receiving callers, telephoning, handling conferences, and securing business information. Business etiquette and ethics.

### O. T. 114. SECRETARIAL OFFICE PRACTICE. (3)

Six periods per week. Prerequisite, senior standing and completion of O. T. 110. The purpose of this course is to give laboratory and office experience to senior students. A minimum of 90 hours of office experience under supervision is required. In addition, each student will prepare a written report on an original problem previously approved.

## BUREAU OF BUSINESS AND ECONOMIC RESEARCH

### VII. BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The responsibilities of the Bureau of Business and Economic Research are research, training, and public service.

The research activities of the Bureau are primarily focused on basic research in the field of regional economic development. The Bureau's long-run research program is carried out by its own staff of faculty members, by faculty members from other departments under co-operative agreement, and by other specialists whose skills may be required in particular investigations. The Bureau also undertakes co-operative research contracts at the request of federal and state governmental agencies, research foundations, and other groups.

The training functions of the Bureau are achieved through active participation by advanced graduate and undergraduate students in the Bureau's research program. This direct involvement of students in the research process under faculty supervision provides research skills that equip students for responsible posts in business, government and higher education.

The Bureau observes its service responsibilities to government, business, and private groups primarily through the publication and distribution of its research findings. In addition, the Bureau staff welcomes the opportunity to be of service to governmental, business, and private groups by discussing with them problems in business and economics, particularly those related to regional development.

### VIII. BUREAU OF GOVERNMENTAL RESEARCH

Activities of the Bureau of Governmental Research relate primarily to the problems of state and local government in Maryland. The Bureau engages in research and publishes findings with reference to local, state and national governments and their interrelationships. It undertakes surveys and offers its assistance and service to units of government in Maryland. It serves as a clearing house of information for the benefit of Maryland state and local government. The Bureau furnishes opportunities for qualified students interested in research and career development in state and local administration.

The Municipal Technical Advisory Service, established in 1959 as a division of the Bureau, provides consulting services to the municipal governments of the State. Technical consultation and assistance are provided on specific municipal problems in such areas as ordinance and charter drafting and codification, budget and other fiscal management, personnel management, utility and other service operations, planning and zon-



ing, and related local or intergovernmental activities. The staff analyzes and shares with governmental officials information concerning professional developments and opportunities for new or improved programs and facilities.

## IX. AFFILIATED GOVERNMENTAL ORGANIZATIONS

### (1.) MARYLAND COUNTY COMMISSIONERS ASSOCIATION

The office of the Maryland County Commissioners Association, an organization of the governing bodies of Maryland counties, is located in the College. The Association develops programs of cooperation, information, and service among the county governments in the State. The Association's mailing address is Maryland County Commissioners Association, Box 362, College Park, Maryland.

### (2.) MARYLAND MUNICIPAL LEAGUE

The office of the Maryland Municipal League, an organization of Maryland cities, is also located in the College of Business and Public Administration. The League provides opportunities for association to municipal officials, offers services to city governments and organizes legislative programs affecting municipal affairs. It publishes monthly the *Maryland Municipal News*. The League's mailing address is Maryland Municipal League, Box 276, College Park, Maryland.

# THE FACULTY

## *Administrative Officers*

O'CONNELL, Donald W., Dean of the College of Business and Public Administration and Professor of Economics

B.A., Columbia University, 1937; M.A., 1938; Ph.D., 1953.

GENTRY, Dwight L., Assistant Dean of the College of Business and Public Administration and Professor of Business Administration

A.B., Elon College, 1941; M.B.A., Northwestern University, 1947; Ph.D., University of Illinois, 1952.

## *Dean Emeritus*

PYLE, J. Freeman, Dean Emeritus of the College of Business and Public Administration

Ph.B., University of Chicago, 1917; M.A., 1918; Ph.D., 1925.

## *Professors*

BURDETTE, Franklin L., Professor of Government and Politics, and Director of the Bureau of Governmental Research

A.B., Marshall College, 1954; M.A., University of Nebraska, 1935; M.A., Princeton University, 1937; Ph.D., 1938; LL.D., Marshall College, 1959.

CALHOUN, Charles E., Professor of Finance

A.B., University of Washington, 1925; M.B.A., 1930.

CLEMENS, Eli W., Professor of Business Administration

B.S., Virginia Polytechnic Institute, 1930; M.S., University of Illinois, 1934; Ph.D., University of Wisconsin, 1940.

COOK, J. Allan, Professor of Marketing

B.A., College of William and Mary, 1928; M.B.A., Harvard University, 1936; Ph.D., Columbia University, 1947.

CROWELL, Alfred A., Professor and Head of the Department of Journalism and Public Relations

A.B., University of Oklahoma, 1929; M.A., 1934; M.S.J., Northwestern University, 1940.

CUMBERLAND, John H., Professor of Economics and Assistant Director, in Charge, Bureau of Business and Economic Research

B.A., University of Maryland, 1947; M.A., Harvard University, 1949; Ph.D., 1951.

DILLARD, Dudley, Professor and Head of the Department of Economics

B.S., University of California, 1935; Ph.D., 1940.

DILLON, Conley H., Professor of Government and Politics

B.A., Marshall College, 1928; M.A., Duke University, 1933; Ph.D., 1936.

## FACULTY

FISHER, Allan J., Professor of Accounting and Finance

B.S., Wharton School of Finance and Commerce, 1928; Litt.M., University of Pittsburgh, 1936; Ph.D., 1937.

GRUCHY, Allan G., Professor of Economics

B.A., University of British Columbia, 1926; M.A., McGill University, 1928; Ph.D., University of Virginia, 1931.

HARRISON, Horace V., Professor of Government and Politics

B.A., Trinity University, Texas, 1932; M.A., University of Texas, 1941; Ph.D., 1951.

HU, Charles Y., Professor of Geography

B.S., University of Nanking, China, 1930; M.A., University of California, 1936; Ph.D., University of Chicago, 1941.

NELSON, Boyd L., Professor of Statistics

B.A., University of Wisconsin, 1947; M.A., 1948; Ph.D., 1952.

NEWSOM, D. Earl, Professor of Journalism and Director of the Sequence in Editorial Journalism

B.S., Oklahoma State University, 1948; M.S.J., Northwestern University, 1949; Ed.D., Oklahoma State University, 1957.

PATRICK, Arthur S., Professor of Office Management and Business Education

B.S., Wisconsin State College, 1931; M.A., University of Iowa, 1940; Ph.D., American University, 1956.

PLISCHKE, Elmer, Professor and Head of the Department of Government and Politics

Ph.B., Marquette University, 1937; M.A., American University, 1938; Ph.D., Clark University, 1943.

SCHULTZE, Charles L., Professor of Economics

B.A., Georgetown University, 1948; M.A., 1950; Ph.D., University of Maryland, 1960.

STEINMEYER, Reuben G., Professor of Government and Politics

A.B., American University, 1929; Ph.D., 1935.

SWEENEY, Charles T., Professor of Accounting

B.S., Cornell University, 1921; M.B.A., University of Michigan, 1928; C.P.A., Iowa, 1934; Ohio, 1936.

SYLVESTER, Harold F., Professor of Personnel Administration

Ph.D., The Johns Hopkins University, 1938.

TAFF, Charles A., Professor and Head of the Department of Business Administration

B.S., University of Iowa, 1937; M.A., 1941; Ph.D., University of Maryland, 1952.

ULMER, Melville J., Professor of Economics

B.S., New York University, 1937; M.A., 1938; Ph.D., Columbia University, 1948.

## FACULTY

VAN ROYEN, William, Professor and Head of the Department of Geography  
M.A., Rijksuniversiteit Utrecht, 1925; Ph.D., Clark University, 1928.

WRIGHT, Howard W., Professor of Accounting  
B.S., Temple University, 1937; M.A., University of Iowa, 1940; C.P.A., Texas, 1940; Ph.D., University of Iowa, 1947.

### *Consulting Professor*

ROTHERUS, Victor, Consulting Professor of Geography  
Ph.D., University of Chicago, 1930; M.S., 1931.

### *Associate Professors*

AHNERT, Frank O., Associate Professor of Geography  
Dr. Phil., Heidelberg University, 1953.

ANDERSON, Thornton H., Associate Professor of Government and Politics  
A.B., University of Kentucky, 1937; M.A., 1938; Ph.D., University of Wisconsin, 1948.

ASHMEN, Roy, Associate Professor of Marketing  
B.S., Drexel Institute of Technology, 1935; M.S., Columbia University, 1936; Ph.D., Northwestern University, 1950.

BRYAN, Carter R., Associate Professor of Journalism  
B.A., University of California, 1937; Ph.D., University of Vienna, Austria, 1940.

CHASE, Samuel B., III, Associate Professor of Economics  
A.B., Dartmouth College, 1954; Ph.D., University of California, 1960.

CHAVES, Antonio, Associate Professor of Geography  
M.A., Northwestern, 1948; D.Litt., University of Habana, 1941; Ph.D., University of Habana, 1946.

DAWSON, Townes L., Associate Professor of Business Law  
B.B.A., University of Texas, 1943; B.A., U.S. Merchant Marine Academy, 1946; M.B.A., University of Texas, 1947; Ph.D., 1950; LL.B., 1954.

DESHLER, Walter W., Associate Professor of Geography  
B.S., Lafayette College, 1943; M.A., University of Maryland, 1952; Ph.D., 1957.

GRAMLEY, Lyle E., Associate Professor of Economics  
B.A., Beloit College, 1951; M.A., Indiana University, 1952; Ph.D., 1956.

HATHORN, Guy B., Associate Professor of Government and Politics  
B.A., University of Mississippi, 1940; M.A., 1942; Ph.D., Duke University, 1950.

KNIGHT, Robert E. L., Associate Professor of Economics  
A.B., Harvard University, 1948; Ph.D., University of California, 1958.



- McNELLY, Theodore H., Associate Professor of Government and Politics  
B.S., University of Wisconsin, 1941; M.A., 1942; Ph.D., Columbia University, 1952.
- SPIVEY, Clinton, Associate Professor of Industrial Management  
B.S., University of Illinois, 1946; M.S., 1947; Ph.D., 1957.
- VINOCOUR, S. M., Associate Professor of Public Relations and Director of the Sequence in Public Relations  
A.B., University of Southern California, 1943; M.A., University of Nevada, 1948; Ph.D., Pennsylvania State University, 1953.
- WONNACOTT, Paul, Associate Professor of Economics  
B.A., University of Western Ontario, 1955; M.A., Princeton, 1957; Ph.D., 1959.

### *Assistant Professors*

- ALPERIN, Robert J., Assistant Professor of Government and Politics  
B.A., University of Chicago, 1950; M.A., 1952; Ph.D., Northwestern University, 1959.
- ANDERSON, Henry, Assistant Professor of Statistics  
B.A., University of London, 1939; M.B.A., Columbia University, 1948; Ph.D., 1959.
- ANDERSON, Jeremy H., Assistant Professor of Geography  
B.A., Yale University, 1956; M.A., University of Washington, 1959.
- BEDFORD, Jimmy B., Assistant Professor of Journalism  
A.B., University of Missouri, 1950; B.J., 1951; M.A., 1952.
- BENNETT, Robert L., Assistant Professor of Economics  
B.A., University of Texas, 1951; M.A., 1955; Ph.D., 1963.
- BRUNNER, G. Allen, Assistant Professor of Marketing  
B.B.A., University of Toledo, 1958; M.B.A., 1960; Ph.D., The Ohio State University, 1963.
- BYRD, Elbert M., Jr., Assistant Professor of Government and Politics  
B.S., American University, 1953; M.A., 1954; Ph.D., 1959.
- CLICKNER, Edwin K., Assistant Professor in Business Organization  
B.S., American University, 1951; M.A., 1955; Ph.D., American University, 1963.
- DAIKER, John A., Assistant Professor of Accounting  
B.S., University of Maryland, 1941; M.B.A., 1951; C.P.A., District of Columbia, 1949.
- DODGE, Norton T., Assistant Professor of Economics  
A.B., Cornell University, 1948; M.A., Harvard University, 1951; Ph.D., 1960.
- DORSEY, John W., Assistant Professor of Economics  
B.S., University of Maryland, 1958; M.A., Harvard University, 1962; Ph.D., 1964.

## FACULTY

EDELSON, Charles B., Assistant Professor of Accounting

B.B.A., University of New Mexico, 1949; M.B.A., Indiana University, 1950; C.P.A., Maryland, 1951.

EVERARD, Kenneth E., Assistant Professor of Office Management and Techniques

B.A., State University of New York, 1954; M.S., 1955; Ed.D., Indiana University, 1962.

HERMANSON, Roger H., Assistant Professor of Accounting

B.A., Michigan State University, 1954; M.A., 1955; Ph.D., 1963.

HIMES, Robert S., Assistant Professor of Accounting

B.C.S., Benjamin Franklin University, 1939; M.C.S., 1940; B.S., American University; Ph.D., 1962.

JACOBS, Walter D., Assistant Professor of Government and Politics

B.S., Columbia University, 1955; M.A., and Certificate of Russian Institute, 1956; Ph.D., 1961.

KINERNEY, Eugene J., Assistant Professor in Geography

B.S., University of Kansas City, 1959; M.A., University of Missouri, 1961.

KOKAT, Robert G., Assistant Professor of Economics and Research Associate, Bureau of Business and Economic Research

B.A., Pennsylvania State University, 1956; M.S., 1957; D.B.A., Indiana University, 1962.

MIKA, Paul, Assistant Professor in Geography

A.B., University of Pittsburgh, 1954; M.A., George Washington University, 1958.

NASH, Allan N., Assistant Professor of Personnel Administration

B.A., University of Minnesota, 1957; M.A., 1959; Ph.D., 1963.

NOALL, William F., Assistant Professor of Public Relations

B.S., Kent State University, 1957; M.S., Ohio University, 1960.

O'DONNELL, Maurice E., Assistant Professor of Government and Politics

B.S., Eastern Illinois State, 1948; M.S., University of Wisconsin, 1951; Ph.D., 1954.

PAINE, Frank T., Assistant Professor of Business Administration

B.S., Syracuse University, 1951; M.B.A., 1956; Ph.D., Stanford University, 1963.

RAIA, Anthony P., Assistant Professor of Business Administration

B.S., Columbia University, 1956; M.B.A., University of California, Los Angeles, 1960; Ph.D., 1963.

SCHELLENBERGER, Robert E., Assistant Professor of Business Administration

B.B.A., University of Wisconsin, 1958; M.B.A., 1959; Ph.D., University of North Carolina, 1963.

SCHMIEDER, Allan A., Assistant Professor in Geography

B.S., Edinboro State College, 1955; M.A., Ohio State University, 1956.

SMERK, George M., Assistant Professor of Transportation

B.S., Bradley University, 1955; M.B.A., 1957; D.B.A., Indiana University, 1963; Ph.D., 1963.

WIEDEL, Joseph W., Assistant Professor in Geography  
B.A., University of Maryland, 1958; M.A., 1963.

## *Instructors*

ANDERSON, Charles R., Instructor in Office Management and Techniques  
B.S., University of Maryland, 1957; M.Ed., 1959.

AUGUSTA, Joseph H., Instructor in Economics  
B.A., University of California, 1959; M.A., Michigan State University, 1960.

BAILEY, William M., Instructor in Economics  
B.A., North Texas State College, 1959.

BEAL, John H., Instructor in Business Administration  
B.A., Carlton College, 1961; M.B.A., University of Pennsylvania, 1963.

CAHILL, Daniel J., Instructor in Business Administration  
B.S., University of Maryland, 1961.

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Information Procurement Consultant, Computer Science Center  
A.B., Duke University, 1953; M.S., Columbia University, 1954; C.P.A., Georgia,  
1958.

DAY, Ernest H., Instructor in Economics  
A.B., Oberlin College; LL.B., George Washington University, 1950; M.A., 1955.

DIX, Edward Keith, Instructor in Economics  
A.B., Millsaps College, 1954; M.A., Duke University, 1957.

EMERY, Paul W., Instructor in Business Administration  
B.S., University of Tennessee, 1962.

FUREY, Joseph C., Instructor in Economics  
B.A., University of Maryland, 1948.

HAMILTON, Raymond W., Instructor in Economics  
B.A., American University, 1959.

NEFFINGER, George G., Instructor in Business Organization  
B.S., University of Florida, 1951; M.A., George Washington University, 1958.

O'NEILL, Jane H., Instructor in Office Techniques  
B.A., University of Maryland, 1932.

PUCKETT, Richard H., Instructor in Economics  
B.A., University of Colorado, 1958; M.S., Oklahoma State University, 1960.

SIMPSON, Robert S., Instructor in Business Administration  
B.S., University of California, 1961; M.S., Oregon State, 1963.

WEINTRAUB, Irvin, Instructor in Economics  
A.B., Johns Hopkins University, 1950; M.S., Columbia University, 1951.

## FACULTY

### *Lecturers*

BARBER, Willard F., Lecturer in International Affairs

A.B., Stanford University, 1928; M.A., 1929; Certificate, National War College, 1948.

BEALS, Alan, Lecturer in Government and Politics, and Executive Secretary of the Maryland Municipal League.

A.B., Colgate University, 1954; M.P.A., Syracuse University, 1955.

BERGEN VANDER GRIJP, Derk H. G., Lecturer in Geography (Cartography)

Grad., Royal Military Academy of the Netherlands, 1927; Grad., Photogrammetry, Delft Technical University, 1935; Grad., Topographic Training Centre, N.E.I., 1938; Col., Neth. Army (Ret.).

CONWAY, Mary Margaret, Lecturer in Government and Politics

B.S., Purdue University, 1957; M.A., University of California, 1960.

GORDON, Marvin F., Lecturer in Geography

B.A., City University, New York City, 1942; M.A., Columbia University, New York City, 1954.

HINRICHS, Harley H., Lecturer in Economics

B.B.A., University of Wisconsin, 1953; M.A., Purdue University, 1958.

HOGAN, Lawrence J., Lecturer in Public Relations

B.A., Georgetown University, 1948; LL.B., 1954.

KELLY, Thomas C., Lecturer in Government and Politics, and Executive Secretary of the Maryland County Commissioners Association

B.A., Westminster College, 1953.

LARSON, Harold, Lecturer in Government and Politics

B.A., Morningside College, 1927; M.A., Columbia University, 1928; Ph.D., 1943.

LEMONS, Hoyt, Lecturer in Geography

B.Ed., Southern Illinois University, 1936; M.A., University of Nebraska, 1938; Ph.D., 1941.

MEASDAY, Walter S., Lecturer in Economics

A.B., College of William and Mary, 1945; Ph.D., Massachusetts Institute of Technology, 1955.

MILLON, Milton B., Associate and Lecturer, and Director of the Municipal Technical Advisory Service, Bureau of Governmental Research

A.B., University of Maryland, 1950; M.A., University of Chicago, 1952.

SICKELS, Robert Judd, Lecturer and Research Associate, Bureau of Governmental Research

B.A., University of Chicago, 1950; M.A., 1954; Ph.D., Johns Hopkins University, 1950.

SPENCER, Jean E., Lecturer and Research Associate, Bureau of Governmental Research

B.A., University of Maryland, 1955; M.A., 1961.



SPIEGEL, Henry W., Lecturer in Economics

J.V.D., University of Berlin, 1933; Ph.D., University of Wisconsin, 1939.

TIERNEY, John L., Lecturer in Business Law

A.B., University of Minnesota, 1929; LL.B., University of Wisconsin, 1938;  
LL.M., George Washington University, 1956.

WHITEMAN, Harold L., Lecturer in Geography

B.S., Ball State, 1961; M.A., 1962.

### *Research Associates*

BAKER, James S., Municipal Management Associate, Municipal Technical Advisory Service, Bureau of Governmental Research

B.S.E., University of Michigan, 1956; M.P.A., 1961.

KOKAT, Robert G., Research Associate, Bureau of Business and Economic Research, and Assistant Professor of Economics, Department of Economics

B.S., Pennsylvania State University, 1956; M.S., 1957; D.B.A., Indiana University, 1962.

KRASSA, Lucie G., Research Associate, Bureau of Business and Economic Research  
Doctor Juris, University of Vienna, 1936.

MESTER, Edmund C., Associate, Bureau of Governmental Research

A.B., University of Maryland, 1948; M.A., 1949.

MORYADAS, Subramaniam, Research Associate, Department of Geography

B.A. (Hons.), University of Madras, India, 1953; M.A., University of Maryland, 1963.

RATCHFORD, William S., II, Municipal Management Associate, Municipal Technical Advisory Service, Bureau of Governmental Research

B.A., University of Richmond, 1954; B.S., Johns Hopkins University, 1960; M.A., University of Maryland, 1962.

WYMAN, Sherman M., Municipal Management Associate, Municipal Technical Advisory Service, Bureau of Governmental Research

B.A., Stanford University, 1957; M.P.A., Syracuse University, 1959.









*CATALOG OF THE*  
**COLLEGE  
OF  
EDUCATION**  
1964-66

**THE  
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OF  
MARYLAND**

*Volume 19*

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# UNIVERSITY CALENDAR, 1963-64

## *Fall Semester 1963*

September 16-20	Monday-Friday
September 23	Monday
November 27	Wednesday
December 1	Monday
December 20	Friday

Fall Semester Registration  
Instruction Begins  
Thanksgiving Recess Begins  
After Last Class  
Thanksgiving Recess Ends  
8 a.m.  
Christmas Recess Begins After  
Last Class

## *1964*

January 6	Monday
January 22	Wednesday
January 23-30	Thursday-Wednesday inclusive

Christmas Recess Ends 8 a.m.  
Pre-Examination Study Day  
Fall Semester Examinations

## *Spring Semester*

February 3-7	Monday-Friday
February 10	Monday
February 22	Saturday
March 25	Wednesday
March 26	Thursday
March 31	Tuesday
May 13	Wednesday
May 28	Thursday
May 29-June 5	Friday-Friday
May 30	Saturday
May 31	Sunday
June 6	Saturday

Spring Semester Registration  
Instruction Begins  
Washington's Birthday, Holiday  
Maryland Day, not a holiday  
Easter Recess Begins After Last  
Class  
Easter Recess Ends, 8 a.m.  
AFROTC Day  
Pre-Examination Study Day  
Spring Semester Examinations  
Memorial Day, Holiday  
Baccalaureate Exercises  
Commencement Exercises

## *Summer Session 1964*

June 22	Monday
June 23	Tuesday
July 4	Saturday
August 14	Friday

Summer Session Registration  
Summer Session Begins  
Independence Day, Holiday  
Summer Session Ends

## *Short Courses 1964*

June 15-19	Monday-Saturday
August 3-7	Monday-Saturday
September 8-11	Tuesday-Friday

Rural Women's Short Course  
4-H Club Week  
Firemen's Short Course



# UNIVERSITY CALENDAR, 1964-65

(Tentative)

## *Fall Semester 1964*

September 14-18	Monday-Friday	Fall Semester Registration
September 21	Monday	Instruction Begins
November 25	Wednesday	Thanksgiving Recess Begins After Last Class
November 30	Monday	Thanksgiving Recess Ends 8 a.m.
December 22	Tuesday	Christmas Recess Begins After Last Class

## *1965*

January 4	Monday	Christmas Recess Ends 8 a.m.
January 20	Wednesday	Pre-Examination Study Day
January 21-27	Thursday-Wednesday	Fall Semester Examinations

## *Spring Semester*

February 2-5	Tuesday-Friday	Spring Semester Registration
February 8	Monday	Instruction Begins
February 22	Monday	Washington's Birthday, Holiday
March 25	Thursday	Maryland Day, not a Holiday
April 15	Thursday	Easter Recess Begins After Last Class
April 20	Tuesday	Easter Recess Ends 8 a.m.
May 12	Wednesday	AFROTC Day
May 27	Thursday	Pre-Examination Study Day
May 28-June 4	Friday-Friday	Spring Semester Examinations
May 30	Sunday	Baccalaureate Exercises
May 31	Monday	Memorial Day, Holiday
June 5	Saturday	Commencement Exercises

## *Summer Session*

June 21	Monday	Summer Session Registration
June 22	Tuesday	Summer Session Begins
July 5	Monday	Independence Day, Holiday
August 13	Friday	Summer Session Ends

## *Short Courses*

June 14-18	Monday-Friday	Rural Women's Short Course
August 2-6	Monday-Friday	4-H Club Week
September 7-10	Tuesday-Friday	Firemen's Short Course

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and

## Maryland State Board Of Agriculture

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*McCormick and Company, Inc., 414 Light Street, Baltimore, 21202*

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Baltimore, 21201*

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*Medical Center, Salisbury, 21801*

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THOMAS B. SYMONS

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WILLIAM C. WALSH

*Liberty Trust Building, Cumberland, 21501*

MRS. JOHN L. WHITEHURST

*4101 Greenway, Baltimore, 21218*

# OFFICERS OF ADMINISTRATION

## *Principal Administrative Officers*

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.Litt., Oxford University, 1936; D.Phil., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.

R. LEE HORNBAKE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; Ph.D., 1942.

FRANK L. BENTZ, JR., *Assistant to the President*

B.S., University of Maryland, 1942; Ph.D., 1952.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

## *Emeriti*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.Sc., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women Emerita*

B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

## *Administrative Officers of the Schools and Colleges*

EDWARD W. AITON, *Director, Agricultural Extension Service*

B.S., University of Minnesota, 1933; M.S., 1940; Ed.D., University of Maryland, 1956.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; Ph.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.

WILLIAM P. CUNNINGHAM, *Dean of the School of Law*

A.B., Harvard College, 1944; LL.B., Harvard Law School, 1948.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; Ph.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health.*

B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agriculture Experiment Station*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

VERL S. LEWIS, *Dean of the School of Social Work*

A.B., Huron College, 1933; M.A., University of Chicago, 1939; D.S.W., Western Reserve University, 1954.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; Ph.D., Pennsylvania State University, 1953.

CHARLES MANNING, *Acting Dean of the College of Arts and Sciences*

B.S., Tufts College, 1929; M.A., Harvard University, 1931; Ph.D., University of North Carolina, 1950.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; Ph.D., 1935.

DONALD W. O'CONNELL, *Dean of the College of Business and Public Administration*

B.A., Columbia University, 1937; M.A., 1938; Ph.D., 1953.

JOHN J. SALLEY, *Dean of the School of Dentistry*

D.D.S., Medical College of Virginia, 1947; Ph.D., University of Rochester School of Medicine and Dentistry, 1954.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D. (Hon.), University of Louisville, 1946.

### *General Administrative Officers*

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

B. JAMES BORRESON, *Executive Dean for Student Life*

B.A., University of Minnesota, 1944.

C. WILBUR CISSEL, *Director of Finance and Business*

B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.



HELEN E. CLARKE, *Dean of Women*

B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; Ed.D., Teachers College, Columbia University, 1960.

WILLIAM W. COBEY, *Director of Athletics*

A.B., University of Maryland, 1930.

L. EUGENE CRONIN, *Director of Natural Resources Institute*

A.B., Western Maryland College, 1938; M.S., University of Maryland, 1943; Ph.D., 1946.

LESTER M. DYKE, *Director of Student Health Service*

B.S., University of Iowa, 1936; M.D., 1926.

GEARY F. EPPLEY, *Dean of Men*

B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.

HARRY D. FISHER, *Comptroller and Budget Officer*

B.S., University of Maryland, 1943; C.P.A., 1948.

GEORGE W. FOGG, *Director of Personnel*

B.A., University of Maryland, 1926; M.A., 1928.

ROBERT J. McCARTNEY, *Director of University Relations*

B.A., University of Massachusetts, 1941.

GEORGE W. MORRISON, *Associate Director and Supervising Engineer, Physical Plant (Baltimore)*

B.S., University of Maryland, 1927; E.E., 1931.

VERNON H. REEVES, *Professor of Air Science and Head, Department of Air Science*

B.A., Arizona State College, 1936; M.A., Columbia University, 1949.

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Dipl. Math., University of Heidelberg, 1952; Dr. Rer. Nat., University of Freiburg, 1955.

HOWARD ROVELSTAD, *Director of Libraries*

B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.

CLODUS R. SMITH, *Director of the Summer Session*

B.S., Oklahoma State University, 1950; M.S., 1955; Ed.D., Cornell University, 1960.

GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant.*

B.S., University of Maryland, 1933.

### *Division Chairmen*

JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*

B.S., University of Maryland, 1926; M.S., 1927; Ph.D., 1937.

HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*

B.S., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.

CHARLES E. WHITE, *Chairman of the Lower Division*

B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.

## CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

### GENERAL COMMITTEE ON EDUCATIONAL POLICY

Monroe H. Martin (Arts and Sciences), Chairman

### GENERAL COMMITTEE ON STUDENT LIFE AND WELFARE

Joseph F. Mattick (Agriculture), Chairman

### COMMITTEE ON ADMISSIONS AND SCHOLASTIC STANDING

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### COMMITTEE ON INSTRUCTIONAL PROCEDURES

Thomas G. Andrews (Arts and Sciences), Chairman

### COMMITTEE ON SCHEDULING AND REGISTRATION

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V. R. Cardozier (Agriculture), Chairman

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Donald W. O'Connell (Business and Public Administration), Chairman

### COMMITTEE ON LIBRARIES

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### COMMITTEE ON UNIVERSITY PUBLICATIONS

Mark Keeny (Agriculture), Chairman

### COMMITTEE ON INTERCOLLEGIATE COMPETITION

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### COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM AND TENURE

George Anastos (Arts and Sciences), Chairman

### COMMITTEE ON APPOINTMENTS, PROMOTIONS, AND SALARIES

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### COMMITTEE ON FACULTY LIFE AND WELFARE

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Calvin Gaver (Dentistry), Chairman





# THE COLLEGE OF EDUCATION

The College of Education meets the needs of the following classes of students: (1) persons preparing to teach in colleges, secondary schools, elementary schools, kindergarten, and nursery schools; (2) persons preparing to teach classes in special education and to be school librarians; (3) present or prospective teachers who wish to supplement their preparation; (4) students preparing for educational work in the trades and industries; (5) graduate students preparing for teaching, supervisory, or administrative positions; (6) students whose major interests are in other fields, but who desire courses in education.

## SPECIAL FACILITIES AND ACTIVITIES

### RESEARCH AND TEACHING FACILITIES

Because of the location of the University in the suburbs of the nation's capital, unusual facilities for the study of education are available to its students and faculty. The Library of Congress, the library of the United States Office of Education, and special libraries of other government agencies are accessible, as well as the information services of the National Education Association, American Council on Education, United States Office of Education, and other organizations, public and private. The school systems of the District of Columbia, Baltimore, and the counties of Maryland offer generous cooperation.

### THE INSTITUTE FOR CHILD STUDY

The Institute for Child Study carries on the following activities: (1) it undertakes basic research in human development; (2) it digests and synthesizes research findings from the many sciences that study human beings; (3) it plans, organizes, and provides consultant service programs of direct child study by in-service teachers in individual schools or in municipal, county or state systems; (4) it offers field training to a limited number of properly qualified doctoral students, preparing them to render expert consultant service to schools and for college teaching of human development. The College of Education operates a Workshop on Child Development and Education for six weeks each summer. Inquiries should be addressed to Director, Institute for Child Study.

### BUREAU OF EDUCATIONAL RESEARCH AND FIELD SERVICES

The Bureau of Educational Research and Field Services has been established to (1) encourage and stimulate basic research bearing on different aspects of the educative process; (2) provide assistance in designing, implementing and evaluating research projects initiated by local school systems; (3) coordinate school systems' requests for consultants with the

## **SPECIAL FACILITIES, UNDERGRADUATE PROGRAM**

rich and varied professional competencies that are available on the University faculty. Additional information about the Bureau's services may be obtained from the Director, Bureau of Educational Research and Field Services.

## **DEPARTMENT OF EARLY CHILDHOOD-ELEMENTARY EDUCATION**

The Department of Early Childhood-Elementary Education offers programs to prepare teachers for nursery schools, kindergarten, and primary grades and for all grades in the elementary school.

## **INDUSTRIAL EDUCATION DEPARTMENT**

The Industrial Education Department is housed in a new building known as the J. Milton Patterson Building. The facilities of this building are devoted exclusively to the work of the Department. There are ten laboratories, a drafting room, library, conference room and two classrooms. All of the laboratories are adequately equipped with modern tools and machines.

## **DEPARTMENT OF SECONDARY EDUCATION**

The Department of Secondary Education is concerned with the preparation of teachers for junior and senior high schools. Teaching majors are offered in the following areas: art, business education, English, foreign languages, home economics, mathematics, music, science, social studies, and speech. Minors are offered in the following areas: library science and special education. Majors in physical education and agriculture are offered in the College of Physical Education, Recreation, and Health and the College of Agriculture in cooperation with the College of Education.

## **THE UNIVERSITY OF MARYLAND NURSERY SCHOOL AND KINDERGARTEN**

The University of Maryland operates a nursery school and kindergarten on the campus in which students majoring in Early Childhood Education receive training and practical experience and in which majors in other areas and in other departments also use the resources for observation, child study, and research.

## **PROFESSIONAL AND PRE-PROFESSIONAL ORGANIZATIONS**

The College of Education sponsors two professional organizations: Phi Delta Kappa, the national professional fraternity for men in education, and Iota Lambda Sigma, the national honorary fraternity in industrial education. Both fraternities have large and active chapters and are providing outstanding professional leadership in their fields of service.

## SPECIAL FACILITIES, UNDERGRADUATE PROGRAMS

The College of Education also sponsors a chapter of the National Honorary Society, Kappa Delta Pi, which is open to both men and women in the field of education.

The College of Education also sponsors a chapter of the Student National Education Association. This chapter is open to undergraduate students on the College Park campus.

## COURSES OUTSIDE OF COLLEGE PARK

Through the University College, a number of courses in education are offered in Baltimore, in other centers in Maryland, and overseas. These courses are chosen to meet the needs of groups of students in various centers. In these centers, on a part-time basis, a student may complete a part of the work required for an undergraduate or a graduate degree. Announcements of such courses may be obtained by addressing requests to the Dean, University College, College Park, Maryland.

## UNIVERSITY CREDENTIAL SERVICE

The University provides placement service for its qualified students and graduates, helping them to secure the kinds of positions they desire. All graduating seniors on the College Park Campus (except Education for Industry majors) are required to file credentials with this office during the fall semester of the senior year. The fee, \$5.00, entitles the student to placement service for the annual period ending October 1.

The University Credential Service provides the necessary link between graduates of the College of Education and employment opportunities in the various teaching fields. This is the only place on campus where complete descriptions of teaching ability and personal qualifications of College of Education graduates can be assembled. These records are permanently maintained and will be sent to prospective employers on the request of the teacher or the employer.

Credential Service records are used: (a) for placement in teaching and other school positions. Graduating seniors and alumni may arrange for on-campus interviews by school and college officials who are seeking teaching and administrative personnel. Several schools and colleges arrange for campus visits each year; (b) for shifts of position for experienced teachers seeking promotion; (c) for securing summer employment; (d) in connection with applications for appointment as exchange teachers or for overseas teaching during leaves of absence; (e) for placement during subsequent years by those who do not teach immediately after graduation; (f) for replying to inquiries of employers in fields other than teaching; and (g) for placement of graduate students in college positions in all fields.



## UNDERGRADUATE STUDIES

### UNDERGRADUATE PROGRAMS

#### REQUIREMENTS FOR ADMISSION\*

##### *Fall Semester*

All applications for full-time undergraduate admission for the Fall Semester at the College Park campus must be received by the University on or before July 15. Any student registering for seven (7) or more semester hours of work is considered a full-time student.

Under unusual circumstances, applications will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$15.00 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10.00 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission must be received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

##### *Spring Semester*

The deadline for the receipt of applications for the Spring Semester is January 1.

##### *University College*

The application deadlines and fees *do not* apply to students registering in the evening classes offered by the University College.

##### *Graduate School*

Application for admission to the Graduate School must be made by September 1 for the fall term and by January 1 for the spring term on blanks obtained from the Office of the Graduate School. Admission to the summer session is governed by the date listed in the Summer School catalog. The summer session deadline date is generally June 1.

#### REQUIREMENTS

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college rather than upon a fixed

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\*See also p. 7 for requirements for admission to teacher education in the junior year.



pattern of subject matter. Of the sixteen required units, four (4) units of English and one unit each of social sciences, natural sciences, and mathematics are required. Additional units in mathematics, natural sciences, and social sciences are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various College of Education curricula. While a foreign language is desirable for certain programs, no foreign language is required for entrance. Fine arts, trade and vocational subjects are acceptable as electives. Every prospective applicant should be certain that his preparation in mathematics is adequate for any program that he might wish to enter.

Students are referred to the publication *An Adventure in Learning* for a complete statement of requirements for admission to the different curricula in the College of Education.

Candidates for admission whose high school or college records are consistently low are strongly advised not to seek admission to the College of Education.

### GENERAL INFORMATION

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all new undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

#### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

#### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(College in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

## UNDERGRADUATE STUDIES

### AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science training for a period of two semesters. The successful completion of this sequence is a prerequisite for graduation and must be taken by all eligible students during the first two semesters of attendance at the University. Transfer students who do not have the required two semesters of air science training will be required to complete the sequence or take it until graduation, whichever occurs first.

For further details concerning air science, refer to *University General and Academic Regulations*, a publication available to all entering undergraduate students.

### PHYSICAL EDUCATION AND HEALTH

All undergraduate students classified academically as freshmen and sophomores, irrespective of their physical condition, who are registered for more than six semester hours, are required to complete four prescribed courses in physical education. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have credit in these courses or their equivalent, must complete them or take them until graduation, whichever occurs first. Students with military service may receive credit for these required courses by applying to Room 140, Cole Activities Building.

### GUIDANCE IN REGISTRATION

At the time of matriculation each student is tentatively assigned to a member of the faculty who acts as the student's personal adviser. The choice of subject areas within which the student will prepare to teach will be made under faculty guidance during the freshman year. The student will advise regularly with the faculty member in the College of Education responsible for his teaching major. While it may be possible to make satisfactory adjustments as late as the junior year for students from other colleges who have not already entered upon the sequence of professional courses, it is highly desirable that the student begin his professional work in the freshman year. *Students who intend to teach* (except Vocational Agriculture) *should register in the College of Education*, in order that they may have the continuous counsel and guidance of the faculty directly responsible for teacher education at the University of Maryland.

### JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time

of computation shall be included; courses carrying "O" credit shall not be included; in every course only the most recent grade shall be counted; courses in Basic Air Science, the physical education required of all University students, and the health courses required of all women students shall not be included. Courses in Advanced Air Science and courses in health or physical education which are taken as electives shall be included.

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

The first two years of college work are preparatory to the professional work of the junior and senior work. To be eligible to enter the junior year professional courses, a student must have attained junior status. He must also have applied for admission to teacher education. This application must be approved by the Admission to Teacher Education Committee before the student may continue his program in teacher education. Transfer students in teacher education must also be approved if they are beyond the sophomore level.

### CERTIFICATION OF TEACHERS

The State Department of Education certifies to teach in the approved public schools of the state only graduates of approved colleges who have satisfactorily fulfilled subject-matter and professional requirements. The several curricula of the College of Education fulfill State Department requirements for certification.

Students intending to qualify as teachers in Baltimore, Washington, or any other city or state should, in their junior year, obtain a statement of certification requirements from these areas and be guided thereby in the selection of courses. Advisers will assist in obtaining and utilizing such information.

The teacher education program of the College of Education is accredited by the National Council for Accreditation of Teacher Education. The two-year graduate program for the preparation of superintendents is accredited by the Council.

### DEGREES

The degrees conferred upon students who have met the conditions prescribed for a degree in the College of Education are Bachelor of Arts and Bachelor of Science. Majors in art, English, languages, social sciences, and speech receive the B.A. degree. Mathematics majors may receive either degree. All others receive the B.S. degree.

### COSTS

Actual annual costs of attending the University for an undergraduate student include \$250.00 fixed charges; \$96.00 special fees; \$420.00 board; \$290.00 to \$320.00 lodging for Maryland residents, or \$340.00 to



## UNDERGRADUATE STUDIES

\$370.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. A charge of \$400.00 is assessed to all students who are non-residents of the state of Maryland.

*An Adventure in Learning*, the undergraduate catalog of the University, contains a detailed statement of fees and expenses and includes changes in fees as they occur. A copy may be requested from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park.

## REMISSION OF FEES

A full time undergraduate student in the College of Education who signs and honors a pledge to teach for two years full-time in the public schools of Maryland immediately following graduation and who remains in good standing academically may receive remission of fixed charges for a maximum of four academic years while enrolled at the University of Maryland. *This opportunity is available to residents of Maryland only.* For further details write to the College of Education.

## DEFINITION OF RESIDENCE AND NON-RESIDENCE

Students who are minors are considered to be resident students if at the time of their registration their parents have been domiciled in the State of Maryland for at least six months.

The status of the residence of a student is determined at the time of his first registration in the University and may not thereafter be changed by him unless, in the case of a minor, his parents move to and become legal residents of Maryland by maintaining such residence for at least six months. However, the right of the minor student to change from a non-resident status to resident status must be established by him prior to the registration period set for any semester.

Adult students are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least six months provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the six-months period referred to above except in those cases in which the adult was domiciled in Maryland for at least six months prior to his entrance into the armed service and was not enrolled in any school during that period.

The word "domicile" as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.



## GRADUATE STUDIES

### GRADUATE STATUS

For graduate study in education a student must have earned at least 16 semester credits in education at the undergraduate level, and hold a bachelor's or master's degree from a college or university of recognized standing. This requirement may be interpreted so that foundation work in fields other than education may be accepted in cases of graduate students not preparing for teaching. The student must also satisfy the Graduate School as to his ability to do graduate work.

All *new* graduate students in education are required, during the first semester of graduate work, to take a test battery. A testing fee of \$5.00 will be charged on first registration.

### REGISTRATION

A graduate student in education must matriculate in the Graduate School. Application for admission to the Graduate School should be made prior to dates of registration on blanks obtained from the office of the Dean of the Graduate School. For further instructions a student should consult the Graduate School Announcements.

### MASTER'S DEGREE

A graduate student in education may matriculate for a Master of Education or a Master of Arts degree. For requirements of these degrees, the student should consult both the Graduate School Announcements and the duplicated material issued by the College of Education. On matriculation, the student will be assigned a faculty adviser.

### ADVANCED GRADUATE SPECIALIST IN EDUCATION

A student who wishes to enter this program, which requires a minimum of 60 hours of graduate work, beyond the bachelor's degree, must have completed a master's degree. The student is admitted to the Graduate School on a special nondegree basis. For requirements of this program, the student should consult the duplicated material issued by the College of Education.

### DOCTORAL DEGREES

Programs leading to a Doctor of Philosophy in education or a Doctor of Education degree are administered for the Graduate School by the Department of Education. For requirements of these degrees, the student should consult both the Graduate School Announcements and the statement of policy relative to doctoral programs in education. The student will ordinarily be assigned to an advisor by the Director of Graduate Studies.

# REQUIRED COURSES

The undergraduate curricula in the College of Education with advisers for each curriculum are as follows:

Agriculture and Extension Education (under the College of Agriculture)  
V. R. Cardozier

Early Childhood-Elementary Education  
Early Childhood Education  
James L. Hymes, Jr.  
Margaret A. Stant

Elementary Education  
Glenn O. Blough  
Frederick A. Brown  
Robert V. Duffey  
John Fanning  
William J. Massey  
Leo W. O'Neill  
Alvin W. Schindler  
Eric Seidman  
V. Phillips Weaver

Industrial Education  
Edmund D. Crosby  
Kenneth Guy  
Paul E. Harrison  
Irving Herrick  
Joseph F. Luetkemeyer  
Donald Maley  
George R. Merrill  
Carl S. Schramm  
William F. Tierney

Library Science Education (Minor only)  
Dale W. Brown

Secondary Education  
Art Education  
Edward L. Longley, Jr.

Business Education  
Arthur S. Patrick

English Education  
Marie D. Bryan

Foreign Language Education  
Henry Mendeloff

## GENERAL REQUIREMENTS

Home Economics Education  
Mabel S. Spencer

Mathematics Education  
Mildred Cole  
Elise Cussler  
Helen Garstens

Music Education  
Beula B. Eisenstadt

Physical Education (Men)  
Albert W. Woods

Physical Education (Women)  
Wilda Pickett

Science Education  
J. David Lockard

Social Studies Education  
Elwood Campbell  
Jean Grambs  
Robert G. Risinger  
James Van Ness

Speech Education  
Allen D. Frank

Special Education (Minor only)  
Jean R. Hebeler  
Paul Renz

### GENERAL REQUIREMENTS OF THE COLLEGE

A total of 120 semester hours in addition to the University requirements in military science and physical education is required for graduation in the College of Education. In no case shall the total number of semester hours required for graduation be less than 128.

The following are minimum requirements for graduation: English—12 semester hours; social studies—12 semester hours as follows: G. & P. 1—American Government; H. 5, 6—History of American Civilization; and one of the following courses: Soc. 1—Sociology of American Life, Phil. 1—Philosophy for Modern Man, Psych. 1—Introduction to Psychology, Econ. 31—Principles of Economics, or Econ. 37—Fundamentals of Economics; science or mathematics—6 semester hours; education—20 semester hours; speech—3 semester hours; physical education and military science as required by the University. (Students who qualify in classification tests in English, American history, or American government will be exempted from a three-hour requirement in the area concerned and will select a replacement from a set of courses designated. See the publication *An Adventure in Learning*.)

## GENERAL REQUIREMENTS

Marks in all required upper division courses in education and in subjects in major and minor fields must be "C" or higher. A general average of "C" or higher must be maintained. In order to be admitted to a course in student teaching, *a student must have a grade point average of 2.30, a physician's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor in the appropriate area. Application must be made with the appropriate adviser by the middle of the semester which precedes the one in which student teaching will be done. Any applicant for student teaching must have been enrolled previously at the University of Maryland for at least one semester.*

Exceptions to curricular requirements and rules of the College of Education must be recommended by the student's adviser and approved by the Dean.

Students who are not enrolled in the College of Education but who are preparing to teach must meet all curricular and scholastic requirements of the College of Education.

## MAJORS AND MINORS

Students selecting a major in social studies, English, mathematics, science, and foreign languages have no minor requirements. Other teaching majors must have a minor field. In some cases advisers may waive the requirements for a minor when necessary to permit the development of an approved area such as psychology, human development, or sociology.

Students selecting an academic major and an academic minor, or those selecting *one* special teaching field such as industrial education need to take only one methods course: for example, Ed. 140 or Ind. Ed. 140. Students who select an academic major and a special fields minor or vice versa, must take methods courses in both major and minor fields, and should divide their student teaching between the two fields.

## AGRICULTURAL EDUCATION

This curriculum is designed to prepare students for teaching vocational agriculture in high schools. To obtain full particulars on course requirements, the student should consult the catalog of the College of Agriculture.



## EARLY CHILDHOOD-ELEMENTARY EDUCATION

The Department of Early Childhood-Elementary Education offers three undergraduate curriculums leading to the Bachelor of Science degree:

1. Early Childhood Education—for the preparation of teachers in nursery school, kindergarten, and primary grades (grades one two, and three).
2. Elementary Education—for the preparation of teachers of grades one through six.
3. Elementary Education for teachers who are in service (or who plan to return to service) who have completed a two or three year program in a teachers college.

Students who wish to become certified teachers for nursery school and/or kindergarten must follow the Early Childhood Education curriculum (1. above). Students who seek certification for teaching the intermediate grades must follow the Elementary Education curriculum (2. above). Students who plan to teach in the primary grades can achieve certification in either 1. or 2.

Students are urged to refer to courses offered specifically for ECEED majors under the headings Health and Physical Education, Industrial Education, and Music Education.

## EARLY CHILDHOOD EDUCATION

The early childhood education curriculum has as its primary goal the preparation of nursery school, kindergarten, and primary teachers. It is also planned to further the personal development of the student and to provide general education in one facet of homemaking.

Observation and student teaching are done in the University Nursery School and Kindergarten on the campus and in approved schools in nearby communities.

Graduates receive a B.S. degree and meet the requirements for certification for teaching kindergarten and nursery school and primary grades in Maryland. Each student should have one summer of experience in working with children.

## EARLY CHILDHOOD EDUCATION CURRICULUM

## EARLY CHILDHOOD EDUCATION CURRICULUM

(Nursery-Kindergarten-Primary)

FRESHMAN YEAR	Semester	
	I	II
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life <i>or</i> Phil. 1—Philosophy for Modern Man <i>or</i> Psych. 1—Introduction to Psychology <sup>1</sup>	3	..
G. & P. 1—American Government.....	..	3
Bot. 1—General Botany.....	4	..
Zool. 1—General Zoology.....	..	4
Speech 3—Fundamentals of General American Speech.....	3	..
Art 15—Fundamentals of Art.....	..	3
Hea. 2, 4—Personal and Community Health (Women)....	2	2
P. E. 2, 4—Physical Education (Women).....	1	1
P. E. 1, 3—Physical Education (Men).....	1	1
A. S. 2, 3—Basic Air Science (Men).....	2	2
Approved electives (Optional).....	..	..
Total.....	16	16

### SOPHOMORE YEAR

Eng. 3, 4—Composition and World Literature <i>or</i> Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Math. 30—Elements of Mathematics.....	..	4
Mus. 16—Music Fundamentals.....	3	..
H.D. Ed. 50, 51—Child Development I, II.....	3	3
Chem. 1—General Chemistry (4) <i>or</i> Geog. 30—Principles of Morphology (3) <i>or</i> Geog. 40—Principles of Meteorol- ogy (3) <i>or</i> Geology 1—Geology (3) <i>or</i> Astr. 1—Astron- omy (3).....	3-4	..
Chem. 3—General Chemistry (4) <i>or</i> F. & N. 5—Food and Nutrition of Individuals and Families (3) <i>or</i> Nutr. 20— Elements of Nutrition (3).....	..	3-4
P. E. 6, 8—Physical Education (Women).....	1	1
P. E. 5, 7—Physical Education (Men).....	1	1
A. S. 4, 5—Basic Air Science (men)*.....	1	1
Total.....	17-18	17-18

<sup>1</sup> Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

\*For students who are intending to enter Advanced Air Force R.O.T.C.

## ELEMENTARY EDUCATION CURRICULUM

JUNIOR YEAR	Semester	
	I	II
ECEEd. 115—Activities and Materials in Early Childhood Education .....	3	..
ECEEd. 116—Music in Early Childhood Education .....	3	..
ECEEd. 153—The Teaching of Reading. A. ....	..	2
ECEEd. 122—Social Studies in the Elementary School. A...	..	2
ECEEd. 124—Mathematics in the Elementary School. A...	..	2
ECEEd. 105—Science in the Elementary School. A. ....	..	2
ECEEd. 123—The Child and the Curriculum. A.....	..	2
Hist. 41—Western Civilization <i>or</i> Hist. 51—The Humanities or Phil. 53—Philosophy of Religion <i>or</i> Soc. 1—Sociology of American Life .....	3	..
Hist. 42—Western Civilization <i>or</i> Hist. 52—The Humanities or Phil. 1—Philosophy for Modern Man <i>or</i> Soc. 14— Urban Sociology .....	..	3
Geog. 10—General Geography .....	3	..
Approved electives .....	4	3
	<hr/>	<hr/>
Total .....	16	16

### SENIOR YEAR

ECEEd 149—Student Teaching in the Elementary School. A. (4); B. (4); C. (8) .....	8	8
Soc. 5—Anthropology <i>or</i> Soc. 105—Cultural Anthropology or Psych. 5—Mental Hygiene <i>or</i> Psych. 21—Social Psychology .....	3	..
Approved Electives .....	4	7
	<hr/>	<hr/>
Total .....	15	15

## ELEMENTARY EDUCATION

There are two undergraduate curriculums in elementary education. The first one is for regular undergraduate students who desire to earn the Bachelor of Science degree and to qualify for an elementary school teaching certificate. The second curriculum is for teachers in service.

### ELEMENTARY EDUCATION CURRICULUM FOR REGULAR UNDERGRADUATE STUDENTS

This curriculum is designed for regular undergraduate students who wish to qualify for teaching positions in elementary schools. Students who complete the curriculum will receive the Bachelor of Science degree, and they will meet the Maryland State Department of Education requirements for the Bachelor of Science Certificate in Elementary Education. The cur-

ELEMENTARY EDUCATION CURRICULUM

riculum also meets certification requirements in many other states, Baltimore, and the District of Columbia.

Some of the academic courses need not be taken in the indicated sequence. For example, Bot. 1 may be taken during the second semester of the freshman year instead of the first semester, or it may be taken during the sophomore or junior year. However, the courses in human development education and certain other education courses must be taken during the junior year, and Ed. 149—Student Teaching in Elementary Schools—must be taken in the senior year.

FRESHMAN YEAR	Semester	
	I	II
Eng. 1, 2 (or 21)—Composition and American Literature . .	3	3
Soc. 1—Sociology of American Life <i>or</i> Phil. 1—Philosophy for Modern Man <i>or</i> Psych. 1—Introduction to Psychology	3	..
G. & P. 1—American Government . . . . .	..	3
Bot. 1—General Botany . . . . .	4	..
Zool. 1—General Zoology . . . . .	..	4
Art. 15—Fundamentals of Art . . . . .	3	..
Mus. 16—Music Fundamentals . . . . .	..	3
Hea. 2—Personal Health (women) . . . . .	2	..
Hea. 4—Community Health (women) . . . . .	..	2
P. E. 1, 3 (men); P. E. 2, 4 (women) . . . . .	1	1
A. S. 2, 3—Basic Air Science (men) . . . . .	2	2
Total . . . . .	16	16
SOPHOMORE YEAR		
Eng. 3, 4—Composition and World Literature <i>or</i> Eng. 5, 6—Composition and English Literature . . . . .	3	3
H. 5, 6—History of American Civilization . . . . .	3	3
Geog. 10—General Geography . . . . .	3	..
ECEEd. 52—Introduction to Children's Literature. B. . . . .	2	..
Math. 30—Elements of Mathematics . . . . .	4	..
Math 31—Elements of Geometry . . . . .	..	4
Physical Science: Chem. 1—General Chemistry (4) <i>or</i> Geol. 1—Geology (3) <i>or</i> Geog. 40— Meteorology (3) <i>or</i> Astronomy 1—Introduction to Astronomy (3) . . . . .	..	3-4
Speech 3—Fundamentals of General American Speech. . . . .	..	3
P.E. 5, 7 (men); P.E. 6, 8 (women) . . . . .	1	1
A. S. 4, 5—Basic Air Science* (men) . . . . .	1	1
Total . . . . .	16-17	17-18

\*For students who are intending to enter Advanced Air Force R.O.T.C.



## ELEMENTARY EDUCATION CURRICULUM

JUNIOR YEAR	Semester	
	I	II
Ed. 110—Human Development and Learning .....	6	..
Hist. 41, 42—Western Civilization .....	3	3
Physical Science: Chem. 1 or 3 (4), or Geol. 1 (3), or Astron. 1 (3), or F. & N. 5—Food and Nutrition or Nutr. 20—Ele- ments of Nutrition (3) .....	3-4	..
ECEEd. 105—Science in the Elementary School. B.* .....	2	..
ECEEd. 121—Language Arts in the Elementary School. B.* ..	..	2
ECEEd. 122—Social Studies in the Elementary School. B.* ..	..	2
ECEEd. 124—Mathematics in the Elementary School. B.* ..	..	2
ECEEd. 153—The Teaching of Reading. B.* .....	2	..
Approved Electives .....	..	7
Total .....	16	16
SENIOR YEAR		
ECEEd. 149—Student Teaching in the Elementary School. C. ..	16	..
Ed. 111—Foundations of Education .....	..	3
Geog. 100—Regional Geography of Eastern Anglo-America or Geog. 101—Regional Geography of Western Anglo- America or Geog. 120—Economic Geography of Europe ..	..	3
P.E. 120—Physical Education in the Elementary School (3) or Mus. Ed. 128—Music for the Elementary School Teacher (2) or ECEEd. 125—Art in the Elementary School (2) .....	..	2-3
Approved electives .....	..	7-8
Total .....	16	16

**NOTE:** One hundred twenty (120) academic credits *plus* the required P.E., Health and A.S. are required for graduation. *At least* eighty (80) of the academic credits must be in fields outside Education. Two of the optional courses (P.E. 120, ECEEd. 125, and ECEEd. 128) may be selected, but these may not be included in the eighty (80) mentioned above.

### AREA OF SPECIALIZATION IN ELEMENTARY SCHOOL PHYSICAL EDUCATION AND HEALTH EDUCATION

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school physical education and health education. Students interested in this area should consult with the Dean of the College of Physical Education, Recreation and Health.

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\*All five "Block" courses may *not* be taken in one semester. Students will register for two in Semester I or II and the remaining three in the other semester. The distribution shown is one of several possible distributions.

## ELEMENTARY EDUCATION CURRICULUM

### AREA OF SPECIALIZATION IN ELEMENTARY SCHOOL MUSIC EDUCATION

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school music education, and thereby qualify for the Bachelor of Science Certificate in Special Subjects. In order to fulfill requirements in this area, the following courses should be taken in addition to those required in the Elementary Education Curriculum:

Music 1 (3); Music 8 (3); Music 160 or 161 (2); Music 70, 71 (4, 4); Music 80, 81 (2, 2); Applied Music; Piano (8), Voice (4); and ECEED. 139 (2) in place of ECEED. 128 (2) in the senior year.

### ELEMENTARY EDUCATION CURRICULUM FOR UNDERGRADUATE TEACHERS

This curriculum is for teachers who have completed a two-or three-year curriculum in a teachers college. It is also for teachers who have two or more years of successful teaching experience which can be used in lieu of student teaching to meet certification requirements.

The minimum requirements for the degree is 128 credits, including at least 85 credits in academic subjects. The *last 30 credits* earned before conferring of the degree *must be earned with the University of Maryland. Only 64 credits from junior colleges* may be applied toward the degree. After a candidate has 64 college credits, he may not transfer any credits from a junior college.

The Maryland State Department of Education specifies that an employed teacher may not earn more than 6 credits for certification purposes from September to June. Teachers are advised to observe this regulation, but the College of Education assumes no responsibility in this connection.

In setting up programs, advisers try to include all courses which are essential for certification. However, it is difficult to determine how transfer credits may be interpreted by certification authorities. Teachers with transfer credits should, therefore, send transcripts to the Maryland State Department of Education, 301 West Preston Street, Baltimore 1, to get an evaluation with reference to certification requirements.

Specific requirements for the degree are as follows:

<i>English</i> , minimum number of credits required .....	21
Eng. 1 and Eng. 2—Composition and American Literature, or the equivalent (3 & 3 crs.)	
Eng. 3 and Eng. 4—Composition and English Literature, or the equivalent in English (3 & 3 crs.)	
Elective courses in English (9 crs.)	

# ELEMENTARY EDUCATION CURRICULUM

<i>Social Sciences</i> , minimum number of credits required . . . . .	30
Soc. 1—Sociology of American Life, <i>or</i> Psych. 1 <i>or</i> Phil. 1 (3 crs.)	
G. & P. 1—American Government (3 crs.)	
Hist. 5 and Hist. 6—History of American Civilization, <i>or</i> the equivalent (3 & 3 crs.)	
History electives required (3 crs.)	
Geog. 10—Principles of Geography, <i>or</i> the equivalent (3 crs.)	
Electives in Econ., Geog., Gov't. and Politics, Hist., and Soc. (12 crs.)	
<i>Science</i> , minimum number of credits required . . . . .	12
Biological sciences—Botany, Entomology, Microbiology, Zoology, (4 crs.)	
Physical sciences—Astronomy, Geology, Chemistry, Physics, Geog. 40, Foods and Nutrition 5, Nutrition 20 (4 crs.)	
Elective courses in Physical <i>and/or</i> Biological sciences (4 crs.)	
<i>Mathematics</i> , minimum number of credits required . . . . .	6
Math. 30 (4 crs.) <i>or</i> Math. 181 (3 crs.), Math. 31 (4 crs.), <i>or</i> any electives in Math.	
<i>Art and Music</i> , minimum number of credits required . . . . .	6
Art 15—Fundamentals of Art, <i>or</i> the equivalent (3 crs.)	
Mus. 16—Music Fundamentals for Teachers, <i>or</i> the equivalent (3 crs.)	
<i>Education</i> , total number of credits required . . . . .	26
Curriculum, including methods in Lang. Arts (ECEEd. 121 <i>or</i> ECEEd. 153), Soc. Studies (ECEEd. 122), Science (ECEEd. 105), Math. (ECEEd. 124) ( <i>at least 12 crs.</i> )	
Foundations of Education, <i>or</i> the equivalent (e.g., Ed. 111) (3 crs.)	
Human Development Education, <i>or</i> the equivalent in Psychology (3 crs.)	
<i>Free electives</i> ( <i>At least 10 of these crs. must be in</i> <i>academic subjects</i> . . . . .	27
Total . . . . .	128

If areas of concentration are developed in Science, Math., Music, or Art, or if more than 134 crs. would be necessary to meet specific requirements listed above, the minimum in English and Social Sciences may be reduced but never below 18 and 24 crs. respectively.

*This curriculum need not apply to teachers who had programs planned before Sept. 1, 1961.*



## INDUSTRIAL EDUCATION CURRICULUM

### INDUSTRIAL EDUCATION

Three curriculums are administered by the Industrial Education Department: (1) Industrial Arts Education. (2) Vocational-Industrial Education, and (3) Education for Industry. The overall offering includes both undergraduate and graduate programs leading to the degrees of: Bachelor of Science, Master of Education, Master of Arts, Doctor of Education, and Doctor of Philosophy.

The industrial arts education curriculum prepares persons to teach industrial arts at the secondary school level. It is a four-year program leading to a Bachelor of Science degree. While trade or industrial experience contributes significantly to the background of the industrial arts teacher, previous work experience is not a condition of entrance into this curriculum. Students who are enrolled in the curriculum are encouraged to obtain work in industry during the summer months. Industrial arts as a secondary school subject area is a part of the general education program characterized by extensive laboratory experiences.

The vocational-industrial curriculum may lead either to certification as a vocational-industrial teacher with no degree involved or to a Bachelor of Science degree, including certification. The University of Maryland is designated as the institution which shall offer the "Trade and Industrial" certification courses and hence the courses which are offered are those required for certification in Maryland. The vocational-industrial curriculum requires trade competence as specified by the *Maryland State Plan for Vocational Education*. A person who aspires to take the certification courses should review the state plan and may well contact Maryland State Department of Education officials. If the person has in mind teaching in a designated city or county he may discuss his plans with the vocational-industrial official of that city or county inasmuch as there are variations in employment and training procedures.

### INDUSTRIAL ARTS EDUCATION CURRICULUM

FRESHMAN YEAR	—Semester—	
	I	II
Eng. 1, 2—Composition and American Literature.....	3	3
Speech 1—Public Speaking .....	..	3
Soc. 1—Sociology of American Life or Phil. 1—Introduction to Philosophy or Psych. 1—Introduction to Psychology..	3	..
G. & P. 1—American Government <sup>1</sup> .....	..	3
Ind. Ed. 1—Mechanical Drawing .....	2	..
Ind. Ed. 34—Graphic Arts I .....	..	3
Ind. Ed. 2—Woodworking I .....	3	..
Ind. Ed. 22—Woodworking II .....	..	3
Ind. Ed. 12—Shop Calculations .....	3	..
A. S. 2, 3—Basic Air Science (men) .....	2	2
P. E. 1, 3—Physical Activities .....	1	1
Total .....	17	18

<sup>1</sup> May be taken either semester.



# INDUSTRIAL EDUCATION CURRICULUM

	Semester	
	I	II
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature, or		
Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
Ind. Ed. 21—Mechanical Drawing.....	2	..
Ind. Ed. 28—Electricity I.....	..	2
Ind. Ed. 26—General Metal Work.....	3	..
Chem. 1, 3—General Chemistry.....	4	4
Math. 10—Introduction to Mathematics.....	..	3
P. E. 5, 7—Physical Activities.....	1	1
Total.....	16	16
<b>JUNIOR YEAR</b>		
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	..
Phys. 1, 2—Elements of Physics.....	3	3
Ind. Ed. 41—Architectural Drawing.....	2	..
Ind. Ed. 48—Electricity II.....	..	2
Ind. Ed. 33—Automotives I.....	3	..
Ind. Ed. 160—Essentials of Design.....	..	2
Ind. Ed. 164—Shop Organization and Management.....	..	2
Ind. Ed. 166—Educational Foundations of Industrial Arts..	2	..
Ed. 161—Principles of Guidance.....	..	3
Electives—(shopwork and/or drafting) <sup>1</sup> .....	2	2
Electives (unspecified).....	2	2
Total.....	20	16
<b>SENIOR YEAR</b>		
Ed. 111—Foundations of Education <sup>2</sup> .....	3	..
Ind. Ed. 140—Curriculum, Instruction and Observation, Industrial Education.....	3	..
Ind. Ed. 148—Student Teaching in Secondary Schools.....	8	..
Sec. Ed. 145—Principles and Methods of Secondary Education.....	3	..
Ind. Ed. 23—Arc and Gas Welding.....	..	1
Ind. Ed. 69—Machine Shop Practice I.....	..	3
Ind. Ed. 105—General Shop.....	..	2
Ind. Ed. 110—Foundry.....	..	1
Econ. 37—Fundamentals of Economics.....	..	3
Electives—(shopwork and/or drafting) <sup>3</sup> .....	..	4
Electives—(professional courses).....	..	5
Total.....	17	19

<sup>1</sup> May be taken either semester.

<sup>2</sup> May be taken either semester.

<sup>3</sup> After the student has completed the basic courses in drafting, woodworking, metal-working, graphic arts and automotives he is to select advanced courses in one or more of these areas as advised.

## INDUSTRIAL EDUCATION CURRICULUM

### VOCATIONAL-INDUSTRIAL

The vocational-industrial curriculum is a four-year program of studies leading to a Bachelor of Science degree in education. It is intended to develop the necessary competencies for the effective performance of the tasks of a vocational teacher. In addition to establishing the adequacy of the student's skills in a particular trade and the development of instructional efficiency, the curriculum aims at the professional and cultural development of the individual. Courses are included which would enrich the person's scientific, economic, psychological and sociological understandings. The vocational-certification courses for the state of Maryland are a part of the curriculum requirements.

Persons pursuing this curriculum must present documentary evidence of having an apprenticeship or comparable learning period and journeyman experience. This evidence of background and training is necessary in order that the trade examination phase of the curriculum may be accomplished.

Persons having completed the necessary certification courses prior to working on the degree program may use such courses toward meeting graduation requirements. However, after certification course requirements have been met, persons continuing studies toward a degree must take courses in line with the curriculum plan and University regulations. (e.g.) junior level courses cannot be taken until the student has reached full junior standing as set forth in the academic regulations for the University.

	Semester	
	I	II
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature . . . . .	3	3
Soc. 1—Sociology of American Life . . . . .	3	..
G. & P. 1—American Government . . . . .	..	3
Speech 1—Public Speaking . . . . .	3	..
Ind. Ed. 12—Shop Calculations . . . . .	3	..
Math. 10—Introduction to Mathematics . . . . .	..	3
A. S. 2, 3—Basic Air Science (men) . . . . .	2	2
P. E. 1, 3—Physical Activities . . . . .	1	1
Total . . . . .	15	12
<b>SOPHOMORE YEAR</b>		
H. 5, 6—History of American Civilization . . . . .	3	3
Eng. 3, 4—Composition and World Literature or		
Eng. 5, 6—Composition and English Literature . . . . .	3	3
Math. 11—Introduction to Mathematics . . . . .	3	..
Phys. 1, 2—Elements of Physics . . . . .	3	3
Econ. 37—Fundamentals of Economics . . . . .	..	3
P. E. 5, 7—Physical Activities . . . . .	1	1
Total . . . . .	13	13

Note: The trade examination (20 semester hours) should be taken prior to entering the fifth semester of work. See regulations covering examination, page 48, *University General and Academic Regulations*.

# INDUSTRIAL EDUCATION CURRICULUM

	Semester	
	I	II
<b>JUNIOR YEAR</b>		
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	..
Chem. 1, 3—General Chemistry.....	4	4
Ind. Ed. 170—Principles of Vocational Education or		
Ind. Ed. 171—History of Vocational Education.....	2	..
Ind. Ed. 168—Trade or Occupational Analysis.....	..	2
Ed. 161—Principles of Guidance.....	3	..
Ed. 150—Educational Measurements .....	..	3
Ind. Ed. 165—Modern Industry .....	..	3
Soc. 115—Industrial Sociology.....	3	..
Electives .....	3	5
Total.....	21	..
<b>SENIOR YEAR</b>		
Ed. 111—Foundations of Education <sup>1</sup> .....	..	3
Ind. Ed. 140—Curriculum, Instruction and Observation....	3	..
Ind. Ed. 148—Student Teaching in Secondary Schools.....	8	..
Sec. Ed. 145—Principles and Methods of Secondary Education	3	..
Econ. 160—Labor Economics .....	..	3
Ind. Ed. 150—Training Aids Development.....	..	3
Ind. Ed. 164—Shop Organization and Management.....	..	2
Electives .....	..	4
Total.....	14	17

**STUDENT TEACHING REQUIREMENT.**—Persons currently teaching in the secondary schools with three or more years of satisfactory experience at that level are not required to take Ind. Ed. 148—Student Teaching in Secondary Schools. Evidence of satisfactory teaching experience shall be presented in the form of written statements from the principal, area supervisor, and department head in the school where such teaching is done. Instead of the eight (8) credits required for student teaching, the individual meeting the above qualifications will have eight (8) additional semester hours of elective credits.

**ELECTIVE CREDITS.**—Courses in history and philosophy of education, sociology, speech, psychology, economics, business administration, and other areas may be taken with the permission of the student's adviser. Elective courses in the technical area (shop and drawing) will be limited to courses and subjects not covered in the trade training experience. Courses dealing with advanced technology and recent improvements in field practices will be acceptable.

<sup>1</sup> May be taken either semester.

## INDUSTRIAL EDUCATION CURRICULUM

### VOCATIONAL-INDUSTRIAL CERTIFICATION

A total of 240 clock hours of instruction is required for vocational-industrial teacher certification. The courses listed below are currently required:

- Ind. Ed. 50—Methods of Teaching
- Ind. Ed. 60—Observation and Demonstration Teaching
- Ind. Ed. 164—Shop Organization and Management
- Ind. Ed. 168—Trade or Occupational Analysis
- Ind. Ed. 169—Course Construction
- Ind. Ed. 170—Principles of Vocational Education, and/or
- Ind. Ed. 171—History of Vocational Education

The remainder of the 240 clock hours are to be met through elective industrial education courses offered by the University of Maryland and approved by the State Supervisor of Industrial Education.”\* The courses from which electives may be chosen are:

- Ind. Ed. 150—Training Aids Development
- Ind. Ed. 157—Tests and Measurements
- Ind. Ed. 161—Principles of Vocational Guidance
- Ind. Ed. 165—Modern Industry
- Ind. Ed. 167—Problems in Occupational Education
- \*Ind. Ed. 220—Organization, Administration and Supervision of Vocational Education
- Ind. Ed. 240—Research in Industrial Arts and Vocational Education
- Ind. Ed. 248—Seminar in Industrial Arts and Vocational Education
- Ed. 150—Educational Measurement
- Ed. 160—Educational Sociology
- Ed. 161—Principles of Guidance
- Ed. 253—Guidance Information
- Ed. 261—Practicum in School Counseling
- Ed. 269—Seminar in Guidance

A person in vocational-industrial education may use his certification courses toward a Bachelor of Science degree. In doing so the general requirements of the University and College of Education must be met. A maximum of twenty semester hours of credit may be earned through examination in the trade in which the student has competence. Prior to taking the examination, the student shall provide documentary evidence of his apprenticeship or learning period and journeyman experience. For further information about credit by examination refer to the publication *University General and Academic Regulations*.

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\*Maryland (State Department of Education). The Maryland State Plan for Vocational Education 1947-1952, p. 108.

\*A course bearing a “200” number is open only to graduate students.



# INDUSTRIAL EDUCATION CURRICULUM

## EDUCATION FOR INDUSTRY

The Education for Industry curriculum is a four-year program leading to a Bachelor of Science degree. The purpose of the program is to prepare persons for jobs within industry and, as such it embraces four major areas of competence, (a) technical competence, (b) human relations and leadership competence, (c) communications competence, and (d) social and civic competence. The student who is enrolled in this curriculum is required to obtain work in industry in accordance with the plan described in the course, Industrial Education 84, 124.

FRESHMAN YEAR	Semester	
	I	II
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life <sup>1</sup> .....	3	..
G. & P. 1—American Government <sup>1</sup> .....	..	3
Ind. Ed. 1—Mechanical Drawing .....	2	..
Ind. Ed. 12—Shop Calculations .....	3	..
Ind. Ed. 21—Mechanical Drawing .....	..	2
Ind. Ed. 22—Woodworking II .....	3	..
Ind. Ed. 23—Arc and Gas Welding .....	..	1
Ind. Ed. 69—Machine Shop Practice I .....	..	3
Ind. Ed. 110—Foundry .....	..	1
Speech 7—Public Speaking .....	2	..
A. S. 2, 3—Basic Air Science (men) .....	2	2
P. E. 1, 3—Physical Activities .....	1	1
Math. 10—Introduction to Mathematics .....	..	3
Total .....	19	19

## SOPHOMORE YEAR

Eng. 3, 4—Composition and World Literature or Eng. 5, 6—Composition and English Literature .....	3	3
Ind. Ed. 24—Sheet Metal Work .....	2	..
B. A. 10—Introduction to Business .....	3	..
Phys. 1, 2—Elements of Physics or Phys. 10, 11—Fundamentals of Physics .....	3 or 4	3 or 4
Math. 11—Introduction to Mathematics .....	3	..
P. E. 5, 7—Physical Activities .....	1	1
H. 5—History of American Civilization .....	..	3
Econ. 37—Fundamentals of Economics .....	..	3
Ind. Ed. 84—Organized and Supervised Work Experiences <sup>1</sup> .....	..	3
Total .....	15-16	16-17

<sup>1</sup> May be taken either semester.

<sup>1</sup> Must be pursued concurrently with the regular summer sessions between the freshman, sophomore, junior and senior years.

## LIBRARY SCIENCE EDUCATION

	Semester	
	I	II
<b>JUNIOR YEAR</b>		
H. 6—History of American Civilization .....	3	..
Psych. 1—Introduction to Psychology .....	3	..
Psych. 5—Personality and Adjustment .....	..	3
Chem. 1, 3—General Chemistry .....	4	4
Econ. 160—Labor Economics .....	3	..
Ind. Ed. 143, 144—Industrial Safety Education .....	2	2
B. A. 160—Personnel Management I .....	..	3
Soc. 115—Industrial Sociology .....	..	3
Electives .....	3	3
Total .....	18	18
<b>SENIOR YEAR</b>		
B. A. 161—Personnel Management .....	3	..
B. A. 163—Industrial Relations .....	3	..
B. A. 169—Production Management .....	..	3
Ind. Ed. 124—Organized and Supervised Work Experience <sup>1</sup> .....	3	..
Ind. Ed. 165—Modern Industry .....	..	3
Ind. Ed. 168—Trade or Occupational Analysis .....	2	..
Psych. 161—Industrial Psychology .....	..	3
Electives .....	5	8
Total .....	16	17

## LIBRARY SCIENCE EDUCATION

The undergraduate program in Library Science Education consists of 18 hours, including the following: L.S. Ed. 120; L.S. Ed. 122; L.S. Ed. 124; L.S. Ed. 126; L.S. Ed. 128; L.S. Ed. 130; and L.S. Ed. 132. Students preparing for elementary school library positions should elect L.S. Ed. 130; those seeking secondary school library positions should elect L.S. Ed. 132. Students entering the Library Science Education curriculum should consult with their adviser during the first year of residence for arrangement of program.

Students in the College of Arts and Sciences may elect library science as a minor, subject to the approval of their adviser.

Student Teaching—Students in Library Science Education should have one-half of the hours of student teaching in a school library.

<sup>1</sup> May be pursued in the regular summer sessions between the sophomore and junior and senior years respectively.

## SECONDARY EDUCATION

## ACADEMIC EDUCATION

Students enrolled in this curriculum will meet the above minimum requirements in English and social sciences, plus the following:

1. All students who pursue the B.A. degree in secondary education are required to complete two years (twelve semester hours) of the same foreign language on the college level, or the equivalent. Students who have studied French, German, or Spanish for two or more years in high school, or for two or three semesters in another college or university are required to take the Foreign Language Placement Examination before they continue or resume their study of the language concerned. Students who are placed in French, German, or Spanish 6 (the third college semester) are required to take six additional hours of that language. Students who are placed in French, German or Spanish 7 (the fourth college semester) are required to take three additional hours of that language. Students who are placed in French or Spanish 11, or German 9 (the fifth college semester) are not required to take any further courses in that language. Students who have studied languages other than French, German, or Spanish, or who have lived for two or more years in a foreign country where a language other than English prevails, shall be placed by the chairman of the respective language section, if feasible, or by the Head of the Department of Foreign Languages. Native speakers of a foreign language shall satisfy the foreign language requirement by taking twelve hours of English.

2. Science or mathematics, 12 semester hours.

3. Education, 22-25 semester hours.

4. Speech, 3 semester hours.

All students who elect the academic education curriculum will fulfill the preceding *general* requirements and also prepare to teach one or more school subjects which will involve meeting *specific* requirements in *particular* subject matter fields.

The specific requirements by subject fields areas follow:

*English.* A major in English requires 51 semester hours as follows: English 1, 2, 3, 4, 8, 115, 116, 160; and 150 or 151; 101 or 107; and nine hours of English electives.

Related fields: History 41-42 or 51-52 or 53-54; Speech 1 and 13.

A minor in English requires 27 semester hours. It includes the required freshman and sophomore English courses and 14 semester hours of electives approved by the adviser.

*Social Sciences.* For a major in this group 51 semester hours are required, of which at least 24 hours must be in history, including H. 5, 6, 41 and

## ACADEMIC EDUCATION CURRICULUM

42 and 12 hours of 100-level history courses including H. 199; 27 hours of related social sciences as outlined below:

At least one course in each of the following areas: geography, sociology, government and politics, and economics. Eighteen semester hours in any two of the following areas: economics, geography, sociology, government and politics, or psychology. One-half of these courses must be on the 100 level.

*Modern Foreign Languages.* A major in foreign languages requires 42 semester hours, including the following prescribed courses: one year of advanced conversation; one year of advanced grammar and composition; one year survey of literature; one year of literature on the 100 level; one year of foreign culture.

The foreign language major should be urged to use his elective hours to fulfill the minimum requirements for state certification in another academic subject, preferably a second foreign language.

No academic teaching minor is required.

*Classical Language—Latin.* A minor for teaching Latin requires 24 prescribed semester hours of Latin based upon two years of high school Latin or 18 prescribed semester hours of Latin plus 6 elective hours based upon four years of high school Latin. Those students with two years of high school Latin should take Latin 3, 4, 5, 51, 52, 61, 101 and 102. Those with four years of high school Latin begin with Latin 5; otherwise, the same as above with 6 hours selected from Latin 103, 104, or 105.

It is recommended that electives also be taken from Latin 70, History 153, Comparative Literature 101, English 101, and Art 9.

*Mathematics.* A major in mathematics requires 36 semester hours. The following courses must be included in the major: Math. 18—Introductory Analysis (4), Math. 19—Elementary Analysis (4), Math. 20—Calculus I (4), Math. 21—Calculus II (4), Math. 103—Introduction to Abstract Analysis I (3), Math. 146—Fundamental Concepts of Mathematics (3) and the remainder in electives in mathematics selected with the approval of the adviser. The mathematics major must be supported by one year of physics or one year of chemistry.

*Science.* A science major-minor consists of 52 semester hours study in the academic sciences. Students desiring a minor other than science must complete 40 hours of academic science in addition to their minor requirements.

The following courses are required for all science education majors: Bot. 1—General Botany (4); Chem. 1, 3—General Chemistry (4, 4); Physics 10, 11—Fundamentals of Physics (4, 4); and, Zool. 1—General Zoology (4). Additional courses are selected from the academic sciences, with the approval of the student's advisor, so as to provide subject matter strength in a particular science teaching area, e.g., biology, chemistry, and physics.



## ACADEMIC EDUCATION CURRICULUM

Minors of 28 semester hours are offered in chemistry, in physics and in biological sciences for students not majoring in science education. Minors in biology or physics must be supported by an additional one-year course in chemistry. A minor in chemistry must be supported by an additional one-year course in physics.

*Speech.* A major in speech requires 36 semester hours. It is the policy to build a program of study in anticipation of the needs of prospective teachers in the general field of speech. The following speech courses are required: Speech 1, 4, 5, 10, 16, 22, 23, 105, plus 16 hours of electives in Speech (12 hours of which must be 100-level courses). A teaching minor in another field is also required.

## ACADEMIC EDUCATION CURRICULUM

	(Semester)	
	I	II
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life, Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychol- ogy <sup>1</sup> .....	3	..
Speech 1—Public Speaking .....	3	..
G. & P. 1—American Government <sup>2</sup> .....	..	3
A. S. 2, 3—Basic Air Service (men).....	2	2
P. E. 1, 3—(men); P. E. 2, 4 (women).....	1	1
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2
Science, mathematics, foreign language or major and minor requirements .....	4-6	6
Total.....	18-20	17
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature, or.....	3	3
Eng. 5, 6—Composition and English Literature .....		
H. 5, 6—History of American Civilization.....	3	3
P. E. 5, 7 (men); P. E. 6, 8 (women).....	1	1
Science, mathematics, foreign language or major and minor requirements .....	..	8
Total.....	13	15

<sup>1</sup> Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

<sup>2</sup> May be taken either semester.

## ART EDUCATION CURRICULUM

	Semester	
	I	II
<b>JUNIOR YEAR</b>		
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	..
Major and minor requirements, electives.....	12	15
Total.....	18	15
<b>SENIOR YEAR</b>		
Ed. 111—Foundations of Education <sup>2</sup> .....	..	3
Sec. Ed. 140—Curriculum, Instruction and Observation....	3	..
Sec. Ed. 145—Principles and Methods in Secondary Education .....	3	..
Sec. Ed. 148—Student Teaching in Secondary Schools <sup>3</sup> ....	8	..
Electives from Sec. Ed. 130, Ed. 147, Ed. 150, or ECEEd. 153 .....	2-3	..
Major and minor requirements, electives.....	..	13
Total .....	16-17	16

## ART EDUCATION

Students in art education enroll in one of two programs, elementary or secondary art education. The proposed programs are listed below:

### SECONDARY ART EDUCATION CURRICULUM

	Semester	
	I	II
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introd. to Psychology <sup>4</sup> ....	..	3
G. & P. 1—American Government <sup>1</sup> .....	3	..
Speech 1—Public Speaking .....	3	..
Art 5—Basic Design .....	3	..
Art 1—Drawing .....	..	3
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
A. S. 2, 3—Basic Air Science (men) .....	2	2
P.E. 1, 3 (men) P.E. 2, 4 (women) .....	1	1
Foreign Language <sup>5</sup> or elective.....	3	3
Electives in Art.....	..	3
Total.....	18	18

<sup>1</sup> May be taken either semester. Limited to students who have been admitted to teacher education.

<sup>2</sup> May be taken either semester but not concurrently with Sec. Ed. 140 and 148.

<sup>3</sup> May be taken either semester except for Art education (spring only).

<sup>4</sup> Or Econ. 31 Principles of Economics (3) or Econ. 37 Fundamentals of Economics (3) in the sophomore year.

<sup>5</sup> See foreign language requirements under college requirements.

# ART EDUCATION CURRICULUM

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature.....	3	3
Foreign Language or Electives .....	3	3
Art 9, 11—Art History .....	3	3
Art 7—Basic Painting .....	..	3
Art 13—Sculpture .....	2	..
Cr. 20—Ceramics .....	..	2
P. E. 5, 7—(men) P. E. 6, 8 (women).....	1	1
Electives in Art .....	3	..
Total.....	15	15
<b>JUNIOR YEAR</b>		
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	..
H. 5, 6—American History .....	3	3
Science or Mathematics .....	3	3
A. D. 30—Lettering .....	..	3
Art 104—Life Class .....	..	3
Art 110—Graphics .....	3	..
Sp. 14—Stage Craft .....	3	..
Electives in Art.....	..	3
Total.....	18	15
<b>SENIOR YEAR</b>		
Ed. 111—Foundations of Education <sup>1</sup> .....	3	..
Electives .....	3	..
Electives in Art.....	6	..
Sec. Ed. 140—Curriculum, Instruction and Observation in Art ..	..	3
Ed. 147—Audio Visual Ed. ....	..	3
Sec. Ed. 145—Principles and Methods in Secondary Education .....	..	3
Sec. Ed. 148—Student Teaching in the Secondary School ...	..	8
Electives .....	3	..
Total.....	15	17

<sup>1</sup> Limited to students who have been admitted to teacher education.

# ELEMENTARY EDUCATION CURRICULUM

## ELEMENTARY ART EDUCATION CURRICULUM

### FRESHMAN YEAR

	Semester	
	I	II
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology ..		3
G. & P. 1—American Government .....	3	..
Speech 1—Public Speaking .....	3	..
Art 5—Basic Design or Art 15—Fundamentals of Art. ....	3	..
Art 1—Drawing .....	..	3
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
A. S. 2, 3—Basic Air Science (men) .....	2	2
P. E. 1, 3—(Men); P. E. 2, 4 (women) .....	1	1
Foreign Language <sup>1</sup> or Electives <sup>2</sup> .....	3	3
Total .....	18	15

### SOPHOMORE YEAR

Eng. 3, 4—Composition and World Literature .....	3	3
Science or Mathematics .....	3	3
Art 9, 11—Art History .....	3	3
Art 7—Basic Printing .....	..	3
Art 13—Sculpture .....	2	..
Cr. 20—Ceramics .....	..	2
P. E. 5, 7 (men) P. E. 6, 8 (women) .....	1	1
Electives <sup>2</sup> or Foreign Language <sup>1</sup> .....	3	3
Total .....	15	18

### JUNIOR YEAR

Ed. 110—Human Development and Learning .....	6	..
H. 56—American History .....	3	3
Electives .....	3	3
Cr. 102—Creative Crafts .....	2	..
Art 20—Art Appreciation .....	..	2
Sp. 14—Stagecraft .....	3	..
Electives in Art <sup>2</sup> .....	..	9
Total .....	17	17

<sup>1</sup> See foreign language requirements under College requirements; no foreign language requirements for those earning B. S. degree

<sup>2</sup> Art electives must be chosen with the approval of the adviser and of the 16 credit hours required in the elementary program at least 4 must be in crafts.



## BUSINESS EDUCATION CURRICULUM

	<i>—Semester—</i>	
	<i>I</i>	<i>II</i>
<b>SENIOR YEAR</b>		
Ed. 111—Foundations of Education <sup>1</sup> .....	3	..
ECEEd. 125—Art in the Elementary School .....	2	..
Electives in Art <sup>2</sup> .....	7	..
ECEEd. 140—Curriculum Instruction and Observation in Art ..	..	3
Ed. 147—Audio Visual Education .....	..	3
ECEEd. 123—The Child and the Curriculum .....	3	..
ECEEd. 149—Student Teaching in the Elementary School ..	..	8
Total.....	15	14

## BUSINESS EDUCATION

Two curricula are offered for the preparation of teachers of business subjects. The general business education curriculum qualifies for teaching all business subjects except shorthand. Providing thorough training in general business, including economics, this curriculum leads to teaching positions on both junior and senior high school levels.

The secretarial education curriculum is adapted to the needs of those who wish to become teachers of shorthand as well as other business subjects.

## GENERAL BUSINESS EDUCATION CURRICULUM

	<i>—Semester—</i>	
	<i>I</i>	<i>II</i>
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government.....	3	..
Speech 1—Public Speaking .....	..	3
O. T. 1, 2—Principles and Intermediate Typewriting.....	2	2
B. A. 10—Introduction to Business.....	3	..
Geog. 15—Introductory Economic Geography.....	..	3
Math. 10, 11—Introduction to Mathematics.....	3	3
Econ. 4—Economic Developments .....	..	3
Elective .....	2	..
A. S. 2, 3—Basic Air Science (men).....	2	2
Hea. 2, 4—Personal and Community Health (women)....	2	2
P. E. 1, 3, or P. E. 2, 4—Physical Activities.....	1	1
Total.....	19	20

<sup>1</sup> Limited to students who have been admitted to teacher education.

<sup>2</sup> Art electives must be chosen with the approval of the adviser and of the 16 credit hours required in the elementary program at least 4 must be in crafts.

## BUSINESS EDUCATION CURRICULUM

	Semester	
	I	II
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature.....	3	3
O. T. 10—Office Typewriting Problems.....	2	..
H. 5, 6—History of American Civilization.....	3	3
B. A. 20, 21—Principles of Accounting.....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
Elect. Phil. 1, Psych. 1, or Soc. 1.....	..	3
B. A. 14—Survey of Office Machines.....	2	..
P. E. 5, 7, or P. E. 6, 8—Physical Activities.....	1	1
Total.....	17	16
<b>JUNIOR YEAR</b>		
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	..
B. A. 100—Office Operations and Management.....	3	..
B. A. 166—Business Communications.....	..	3
B. A. 112—Records Management.....	..	2
B. A. 101—Electronic Data Processing.....	..	3
B. A. 149—Marketing Principles and Organization.....	3	..
B. A. 180—Business Law.....	..	3
B. A. 140—Business Finance.....	3	..
Elect. 100 level course in Economics.....	..	3
Total.....	15	14
<b>SENIOR YEAR</b>		
Ed. 111—Foundations of Education <sup>1</sup> .....	3	..
B. A. 102—Electronic Data Processing Applications.....	3	..
Sec. Ed. 140—Curriculum, Instruction, and Observation- Business Subjects.....	3	..
Sec. Ed. 145—Principles and Methods of Secondary Education.....	..	3
B. Ed. 100—Techniques of Teaching Office Skills.....	..	3
Sec. Ed. 148—Student Teaching in Secondary Schools.....	..	8
Electives <sup>2</sup> .....	6	..
Total.....	15	14

<sup>1</sup> May be taken either semester. Limited to students who have been admitted to teacher education.

<sup>2</sup> A minimum of 55 semester hours of courses in economics, business administration, and office techniques are required.

# BUSINESS EDUCATION CURRICULUM

## SECRETARIAL EDUCATION CURRICULUM

	Semester	
	I	II
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government.....	3	..
Math. 10, 11—Introduction to Mathematics.....	3	3
Soc. 1—Sociology of American Life (or Phil. 1, or Psych. 1)	..	3
O. T. 1, 2—Principles and Intermediate Typewriting.....	2	2
O. T. 12, 13—Principles of Shorthand I, II.....	3	3
A. S. 2, 3—Basic Air Science (men).....	2	2
Hea. 2, 4—Personal and Community Health (women).....	2	2
P. E. 1, 3, or 2, 4—Physical Activities.....	1	1
Total.....	19	19
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature.....	3	3
H. 5, 6—History of American Civilization.....	3	3
O. T. 10—Office Typewriting Problems.....	2	..
O. T. 17—Advanced Shorthand and Transcription.....	3	..
O. T. 19—Problems in Transcription.....	..	3
B. A. 14—Survey of Office Machines.....	2	..
Speech 1—Public Speaking.....	..	3
Econ. 31, 32—Principles of Economics.....	3	3
P. E. 5, 7, or P. E. 6, 8—Physical Activities.....	1	1
Total.....	17	16
<b>JUNIOR YEAR</b>		
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	..
B. A. 20, 21—Principles of Accounting.....	3	3
B. A. 100—Office Operations and Management.....	3	..
O. T. 110—Administrative Secretarial Procedures.....	..	3
B. A. 166—Business Communications.....	..	3
Econ. 140—Money and Banking.....	3	..
B. A. 180—Business Law.....	..	3
Elective.....	..	3
Total.....	15	15

<sup>1</sup> May be taken either semester.

## HOME ECONOMICS CURRICULUM

SENIOR YEAR	Semester	
	I	II
Ed. 111—Foundations of Education <sup>1</sup> .....	3	..
O. T. 114—Secretarial Office Practice .....	3	..
B. A. 101—Electronic Data Processing .....	3	..
B. A. 112—Records Management .....	2	..
B. Ed. 100—Techniques of Teaching Office Skills .....	..	3
Sec. Ed. 140—Curriculum, Instruction and Observation— Business Subjects .....	3	..
Sec. Ed. 145—Principles and Methods of Secondary Education .....	..	3
Sec. Ed. 148—Student Teaching in Secondary Schools .....	..	8
Elective <sup>2</sup> .....	3	..
Total .....	17	14

## HOME ECONOMICS EDUCATION

The home economics education curriculum is designed for students who are preparing to teach vocational or general home economics or to engage in any phase of home economics work which requires a knowledge of teaching methods. It includes studies of all phases of home economics and the allied sciences, with professional training for teaching these subjects. A student majoring in this curriculum may also qualify for a science minor.

The offering includes both undergraduate and graduate programs leading to the degrees of Bachelor of Science, Master of Education, and Master of Science.

## HOME ECONOMICS EDUCATION CURRICULUM

FRESHMAN YEAR	Semester	
	I	II
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Philosophy 1—Intro- duction to Philosophy, or Psych. 1—Intro. to Psy- chology .....	3	..
H. E. 5—Intro. to Family Living through H. Ec. ....	2	..
F. & N. 5—Food and Nutrition of Individuals and Family ..	3	..
A. D. 1—Design .....	..	3
Hea. 2 and 4—Personal and Community Health (women) ..	2	2
P. E. 2 and 4 .....	1	1
G. & P. 1—American Government .....	..	3
Sp. 1—Public Speaking .....	..	3
Electives .....	1-2	1-2
Total .....	15-16	16-18

<sup>1</sup> May be taken either semester. Limited to students who have been admitted to teacher education.

<sup>2</sup> A minimum of 55 semester hours of courses in economics, business administration, and office techniques are required.



# HOME ECONOMICS EDUCATION CURRICULUM

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature.....	3	3
or English 5, 6—Composition and English Literature		
Hist. 5, 6—History of American Civilization.....	3	3
A. D. 20—Costume Design.....		3
Tex. & Clo. 5—Textiles & Clothing in Contemporary Living	3	
Clo. 10—Principles and Methods of Clothing Design.....		2
Chem. 11, 13 or 1, 3—General Chemistry.....	3-4	3-4
Foods 10—Scientific Principles of Foods.....		3
P. E. 6, 8.....	1	1
Electives.....	3-4	
<b>Total.....</b>	<b>16-18</b>	<b>19-20</b>
<b>JUNIOR YEAR</b>		
HEEd. 102—Problems in Teaching Home Economics.....	3	
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	
H. Mgt. 50—Decision-making in Family Living.....	3	
Food 150—Food Economics and Meal Management.....	3	
H. Mgt. 160—Scientific Management in the Home.....		3
Nut. 20—Elements of Nutrition or 121—Science of Nutrition		3
Clo. 11—Experimental Clothing Design.....	2	
Econ. 37—Fundamentals of Economics.....		3
Zool. 1—General Zoology.....	4	
Bot. 1—General Botany.....		4
Electives.....	0	0
<b>Total.....</b>	<b>18</b>	<b>16</b>
<b>*SENIOR YEAR</b>		
Ed. 111—Foundations of Education <sup>1</sup> .....	3	
Sec. Ed. 140—Curriculum, Instruction and Observation....	3	
Sec. Ed. 145—Principles and Methods of Secondary Education	3	
Sec. Ed. 148—Teaching Secondary Vocational Home Eco- nomics.....	8	
H. Mgt. 161—Resident Experience in Home Mgt. or H. Mgt. 165—H. Mgt. Practicum.....	3	
A. D. 2—Survey of Art History or T. & C. 128—Fundamen- tals of Home Furnishing.....		2-3
Microb. 1 or 51—Microbiology.....		3-4
Electives.....		7-9
<b>Total.....</b>	<b>20</b>	<b>12-16</b>

\*Subjects in the block are so arranged that the two semesters may be interchanged.

<sup>1</sup> May be taken either semester. Limited to students who have been admitted to teacher education.

<sup>2</sup> H. Ec. 180—Professional Seminar (required of seniors in College of H. Ec.) (2)

## MUSIC EDUCATION CURRICULUM

### MUSIC EDUCATION

The music education curriculum affords pre-service preparation in the specialized field of music education and leads to the degree of Bachelor of Science in education with a major in public school music. The curriculum provides training in both the choral and instrumental fields of music and is planned to meet the growing demand for special teachers and supervisors in those areas. In the junior and senior years the student may elect either the vocal option or the instrumental option.

A minor in the field may be received with 24 semester hours in music education, theory, and history; 8 semester hours in applied music; two semester hours in ensemble; Mus. Ed. 129 or 132; the student teaching divided between the student's major and minor fields. The 24 specified hours must include Music 1, 7, 8, 70, 80 or 81, 121, and 160 or 161.

### MUSIC EDUCATION CURRICULUM

	Semester	
	I	II
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature.....	3	3
Speech 4—Voice and Diction.....	..	3
Music 1—Introduction to Music.....	3	..
Music 7, 8—Theory of Music.....	3	3
Music 12, 13—Applied Music (principal instrument).....	2	2
Music 23, 24—Class Piano <sup>1</sup> .....	2	2
Physical Activities.....	1	1
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
A. S. 2, 3 (men).....	2	2
Health 2, 4 (women).....	2	2
Total.....	19	19
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4, or 5, 6—Composition and Literature.....	3	3
Mathematics or Science.....	3	3
Music 52, 53—Applied Music (principal instrument).....	2	2
Music 70, 71—Advanced Theory of Music.....	4	4
Music 21—Class Voice <sup>2</sup> .....	..	2
Physical Activities.....	1	1
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	14	16

<sup>1</sup> Piano majors take Music 33, 34, Advanced Class Piano.

<sup>2</sup> Voice majors take Music 33, Advanced Class Piano.

# MUSIC EDUCATION CURRICULUM

	Semester	
	I	II
<b>JUNIOR YEAR—VOCAL OPTION</b>		
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	..
H. 5, 6—History of American Civilization .....	3	3
Music 22—Class Voice <sup>2</sup> .....	2	..
Music 31—Advanced Class Voice .....	..	2
Music 80—Class Study of Strings .....	2	..
Music 112, 113—Applied Music (principal instrument) .....	2	2
Music 120, 121—History of Music .....	3	3
Music 160, 161—Conducting .....	2	2
Music Ed. 139—Music for the Elem. School Specialist .....	..	2
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc. ....	1	1
Total .....	21	15
<b>SENIOR YEAR—VOCAL OPTION</b>		
Ed. 111—Foundations of Education <sup>1</sup> .....	3	..
Soc. 1—Sociology of American Life or Phil. 1—Introduction to Philosophy or Psych. 1—Introduction to Psychology <sup>3</sup> ..	3	..
G. & P. 1—American Government .....	3	..
Music 32—Advanced Class Voice .....	2	..
Music 81—Class Study of Winds .....	2	..
Sec. Ed. 145—Principles and Methods of Secondary Education	3	..
Music Ed. 132—Music for the Secondary School .....	2	..
Music 152—Applied Music (principal instrument) .....	2	..
Sec. Ed. 148, ECEEd. 149—Student Teaching .....	..	8
Music Ed. 173—Vocal Music Teacher and School Organiza- tion .....	..	2
Music 147—Orchestration .....	..	2
Electives .....	..	3
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc. ....	1	1
Total .....	22	16
<b>JUNIOR YEAR—INSTRUMENTAL OPTION</b>		
Ed. 110—Human Development and Learning <sup>1</sup> .....	6	..
H. 5, 6—History of American Civilization .....	3	3
Music 22—Class Voice .....	2	..
Music 80, 82—Class Study of Strings .....	2	2
Music 160, 161—Conducting .....	2	2
Music 112—Applied Music (principal instrument) .....	..	2
Music 120, 121—History of Music .....	3	3
Music 147—Orchestration .....	..	2
Music Ed. 132—Music in the Secondary School .....	2	..
Music 4, 5, 6, 10, or 15—Band, Orchestra, etc. ....	1	1
Total .....	21	15

<sup>1</sup> May be taken either semester. Limited to students who have been admitted to teacher education.

<sup>2</sup> Voice majors take Music 34, Advanced Class Piano.

<sup>3</sup> Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3).

SPECIAL EDUCATION

SENIOR YEAR—INSTRUMENTAL OPTION	Semester	
	I	II
Ed. 111—Foundations of Education <sup>1</sup> .....	3	..
G. & P. 1—American Government .....	3	..
Soc. 1—Sociology of American Life or Phil. 1—Introduction to Philosophy or Psych. 1—Introduction to Psychology <sup>1</sup> ..	3	..
Music 81, 83—Class Study of Winds .....	2	2
Sec. Ed. 145—Principles and Methods of Secondary Education	3	..
Music Ed. 129—Instrumental Methods .....	2	..
Music 113, 152—Applied Music (principal instrument)....	2	2
Sec. Ed. 148, ECEEd. 149—Student Teaching .....	..	8
Music Ed. 163—Band Techniques and Administration .....	2	..
Electives .....	..	3
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total .....	18	16

PHYSICAL EDUCATION AND HEALTH EDUCATION

This curriculum is designed to prepare students for teaching physical education in elementary and secondary schools. To obtain full particulars on course requirements, the student should refer to the catalog of the College of Physical Education, Recreation, and Health.

SPECIAL EDUCATION

A minor of 18 hours is offered in special education for undergraduate students with a major in early childhood, elementary or secondary education. This minor is arranged to increase the understanding and competencies of prospective teachers with exceptional children.

SPECIAL EDUCATION MINORS

*\*Early Childhood Education*—Students majoring in childhood education are offered a minor in special education. The following courses should be taken: Sp. Ed. 170 (3), Sp. Ed. 171 (3), Sp. Ed. 172 (3), Sp. Ed. 173 (3), Speech 105 (3) and Hea. 150 (3).

*\*Student Teaching*—Students taking a minor in special education should have one-half of the hours of student teaching in a special class.

<sup>1</sup> Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3).



## SPECIAL EDUCATION

\**Elementary Education*—Students majoring in elementary education are offered a minor in special education. The following courses should be taken: Sp. Ed. 170 (3), Sp. Ed. 171 (3), Sp. Ed. 172 (3), Sp. Ed. 173 (3), Ed. 189 (Summer Workshop in Special Education).

\**Secondary Education*—Students majoring in secondary education are offered a minor in special education. The following courses should be taken: Sp. Ed. 170 (3), Sp. Ed. 171 (3), Sp. Ed. 172 (3), Sp. Ed. 173 (3); plus six semester hours selected from: Ed. 189 (3-6), Speech 105 (3), Hea. 150 (3), Ind. Ed. 9 (2), Nut. 10 (3), Ed. 147 (3).

Students interested in graduate programs (Masters and Advanced Graduate Specialists) in Special Education are requested to consult the Graduate School catalog for appropriate information regarding programs and advisers.

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\**Student Teachers*—Students taking a minor in special education should have one-half of the hours of student teaching in a special class.

# COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students has registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

300 to 399: courses for doctoral candidates and advanced graduate students.

A course with a single number extends through one semester. A course with a double number extends through two semesters. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

## EDUCATION

### *Courses Primarily for Freshmen and Sophomores*

#### ED. 6 OBSERVATION OF TEACHING. (1)

Twenty hours of directed observation. Reports, conferences, and criticisms.  
Consent of Advisor. (Staff.)

#### ED. 90. DEVELOPMENT AND LEARNING. (3)

A study of the principles of learning and their application to school situations. Designed to meet the usual teacher-certification requirement for educational psychology. (Staff.)

### *For Advanced Undergraduates and Graduates*

#### ED. 100. HISTORY OF EDUCATION IN WESTERN CIVILIZATION. (3)

Educational institutions through the ancient, medieval, and early modern periods in the western civilization, as seen against a background of socio-economic development. (Wiggin.)

**ED. 102. HISTORY OF EDUCATION IN THE UNITED STATES. (3)**

A study of the origins and development of the chief features of the present system of education in the United States. (Wiggin.)

**ED. 107. PHILOSOPHY OF EDUCATION. (2-3)**

A study of the great educational philosophers and systems of thought affecting the development of modern education. (Wiggin.)

**ED. 110. HUMAN DEVELOPMENT AND LEARNING. (6)**

Open only to students enrolled in approved teacher education curricula. Studies scientific facts that describe growth, development, and learning, and the implications of these for the teacher and the school. A study of an individual child and a classroom participation experience are integral parts of the course and require a one-half day per week assignment in a public school as a teacher aide. Students are scheduled for field assignments in an elementary or high school according to the curriculum they are in. Each group is under the supervision of a faculty member with whom it meets every second week in a seminar session. (Staff.)

**ED. 111. FOUNDATIONS OF EDUCATION. (3)**

Prerequisites, Ed. 110, completion of at least 90 hours, and approval for admission to teacher education. Historical, social, cultural and philosophical foundations of American education. Considers education as a profession, and the organizational structure, operation and function of modern school systems. Comparative education and contemporary issues are included. (Staff.)

**ED. 147. AUDIO-VISUAL EDUCATION. (3)**

First semester and summer session. Laboratory fee, \$1.00. Sensory impressions in their relation to learning projection apparatus, its cost and operation; slides, filmstrips, and films, physical principles underlying projection; auditory aids to instruction; field trips; pictures, models, and graphic materials; integration of sensory aids with organized instruction. Recommended for all education students. (Herrick, Maley, Schramm.)

**ED. 150. EDUCATIONAL MEASUREMENT. (3)**

First and second semesters; summer session. Constructing and interpreting measures of achievement. (Stunkard.)

**ED. 151. STATISTICAL METHODS IN EDUCATION. (3)**

Designed as a first course in statistics for students in education. Emphasis is upon educational applications of descriptive statistics, including measures of central tendency, variability, and association. (Stunkard.)

**ED. 154. INTRODUCTION TO CORRECTIVE AND REMEDIAL READING. (3)**

Prerequisite, Ed. 153, or the equivalent. Concerned with diagnostic techniques, instructional materials, and teaching procedures useful in the regular classroom. For teachers, supervisors, and administrators who wish to identify and assist pupils with reading difficulties. (Massey.)

**ED. 155. LABORATORY PRACTICES IN READING. (2-4)**

Prerequisite, Ed. 153 or Ed. 154. A laboratory course in which each student has one or more pupils for analysis and instruction. At least one class meeting per week to diagnose individual cases and to plan instruction. (Massey.)

## EDUCATION

### ED. 157. CORRECTIVE-REMEDIAL READING INSTRUCTION. (3)

Prerequisite, Ed. 153 or equivalent. For teachers, supervisors, and administrators who wish to identify and assist pupils with reading difficulties. Concerned with diagnostic techniques, instructional materials, and teaching procedures useful in the regular classroom. (Massey.)

### ED. 160. EDUCATIONAL SOCIOLOGY. (3)

Deals with data of the social sciences which are germane to the work of teachers. Implications of democratic ideology for educational endeavor, educational tasks imposed by changes in population and technological trends, the welfare status of pupils, the socio-economic attitudes of individuals who control the schools, and other elements of community background. (Risinger, Grambs.)

### ED. 161. INTRODUCTION TO COUNSELING AND PUPIL SERVICES. (3)

Presents guidance principles and procedures, and examines the functions of counselors, psychologists in schools, school social workers, and other pupil service workers. (Byrne and Marx.)

### ED. 162. MENTAL HYGIENE IN THE CLASSROOM. (3)

The practical application of the principles of mental hygiene to classroom problems. (Greenberg.)

### ED. 185. PUPIL TRANSPORTATION. (3)

Includes consideration of the organization and administration of state, county, and district pupil transportation service with emphasis on safety and economy. The planning of bus routes; the selection and training of bus drivers, and maintenance mechanics; the specification of school buses; and procurement procedures are included. (Staff.)

### ED. 187. FIELD EXPERIENCE IN EDUCATION. (1-4)

- |                               |                                     |
|-------------------------------|-------------------------------------|
| a. Adult Education            | f. Industrial Arts Education        |
| b. Counseling                 | g. Student Personnel Administration |
| c. Curriculum and Instruction | h. Supervision                      |
| d. Educational Administration | i. Vocational--Industrial Education |
| e. Higher Education           |                                     |

Prerequisites, at least six semester hours in education at the University of Maryland plus such other prerequisites as may be set by the major area in which the experience is to be taken. Planned field experience may be provided for selected graduate students who have had teaching experience and whose application for such field experience has been approved by the Education faculty. Field experience is offered in a given area to both major and non-major students.

Note: The total number of credits which a student may earn in Ed. 187, Ed. 224, and Ed. 287 is limited to a maximum of twenty (20) semester hours.

### ED. 188. SPECIAL PROBLEMS IN EDUCATION. (1-3)

Prerequisites, consent of instructor. Available only to mature students who have definite plans for individual study of approved problems. *Course cards must have the title of the problem and the name of the faculty member who has approved it.* (Staff.)



**ED. 189. WORKSHOPS, CLINICS, AND INSTITUTES. (1-6)**

The maximum number of credits that may be earned under this course symbol toward any degree is six semester hours; the symbol may be used two or more times until six semester hours have been reached. The following type of educational enterprise may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors. (Staff.)

**ED. 190. PROBLEMS AND TRENDS IN CONTEMPORARY AMERICAN EDUCATION. (2-4)**

Designed to present a broad overview of some key issues and trends that relate to the improvement of instruction at elementary, secondary and teacher education levels. Lectures by visiting educators of national prominence will be reviewed and analyzed in discussion groups led by regular University staff members. (Staff.)

*For Graduates***ED. 202. THE JUNIOR COLLEGE. (3)**

The philosophy and development of the junior college in the United States with emphasis on curriculum and administrative controls. Special attention is devoted to the importance, need, place, and development of the technical-terminal or semi-professional curricula. (Kelsey.)

**ED. 203. PROBLEMS IN HIGHER EDUCATION. (3)**

A study of present problems in higher education. (Kelsey.)

**ED. 205. COMPARATIVE EDUCATION. (3)**

A study of historical changes in ways of looking at national school systems, and of problems in assessing their effectiveness. (Wiggin.)

**ED. 206. SEMINAR IN COMPARATIVE EDUCATION. (2)**

(Wiggin.)

**ED. 207. SEMINAR IN HISTORY AND PHILOSOPHY OF EDUCATION. (2)**

(Wiggin.)

**ED. 209. ADULT EDUCATION. (3)**

A study of adult education in the United States, with attention to adult abilities and intelligence, programs of adult education, and a rationale for adult education. (Wiggin.)

**ED. 210. THE ORGANIZATION AND ADMINISTRATION OF PUBLIC EDUCATION. (3)**

First semester. The basic course in school administration. Deals with the organization and administration of school systems—at the local, state, and federal levels; and with the administrative relationships involved.

(Newell, van Zwoll.)

## EDUCATION

### ED. 211. THE ORGANIZATION AND ADMINISTRATION OF SECONDARY SCHOOLS. (3)

Second semester. The work of the secondary school principal. Includes topics such as personnel problems, school-community relationships, student activities, schedule making, and internal financial accounting. (J. P. Anderson.)

### ED. 212. SCHOOL FINANCE AND BUSINESS ADMINISTRATION. (3)

An introduction to principles and practices in the administration of the public school finance activity. Sources of tax revenue, the budget, and the function of finance in the educational program are considered. (van Zwoll.)

### ED. 214. SCHOOL PLANT PLANNING. (2)

An orientation course in which the planning of school buildings is developed as educational designing with reference to problems of site, building facilities, and equipment. (van Zwoll.)

### ED. 216. PUBLIC SCHOOL SUPERVISION. (3)

The nature and functions of supervision; various supervisory techniques and procedures; human relationship factors; and personal qualities for supervision. (J. P. Anderson.)

### ED. 217. ADMINISTRATION AND SUPERVISION IN ELEMENTARY SCHOOLS. (3)

Problems in administering elementary schools and improving instruction. (Staff.)

### ED. 218. SCHOOL SURVEYS. (2-6)

Prerequisite, consent of instructor. Includes study of school surveys with emphasis on problems of school organization and administration, finance and school plant planning. Field work in school surveys is required. (Newell.)

### ED. 219. SEMINAR IN EDUCATIONAL ADMINISTRATION AND SUPERVISION. (2-4)

Prerequisite, at least four hours in educational administration and supervision or consent of instructor. A student may register for two hours and may take the seminar a second time for an additional two hours. (Staff.)

### ED. 221. ADVANCED SCHOOL PLANT PLANNING. (2)

Ed. 214 is a prerequisite to this course. However, students with necessary background may be admitted without completion of Ed. 214. This is an advanced course in school plant planning problems. Emphasis is given to analysis of the educational program and planning of physical facilities to accommodate that program. (van Zwoll.)

### ED. 223. PRACTICUM IN PERSONNEL RELATIONSHIPS. (2-6)

Prerequisite, consent of instructor. Enrollment limited. Designed to help teachers, school administrators, and other school staff members to learn to function more effectively in developing educational policy in group situations. Each student in the course is required to be working concurrently in the field with a group of school staff members or citizens on actual school problems. (Newell.)

**ED. 224. APPRENTICESHIP IN EDUCATION. (6-9)**

- |                               |                                     |
|-------------------------------|-------------------------------------|
| a. Counseling                 | e. Supervision                      |
| b. Curriculum and Instruction | f. Student Personnel Administration |
| c. Educational Administration | g. Vocational Industrial Education  |
| d. Industrial Arts Education  |                                     |

Apprenticeships in the major area of study are available to selected students whose application for an apprenticeship has been approved by the Education faculty. Each apprentice is assigned to work for at least a semester full-time or the equivalent with an appropriate staff member of a cooperating school, school system or educational institution or agency. The sponsor of the apprentice maintains a close working relationship with the apprentice and the other persons involved. Prerequisites, teaching experience, a master's degree in education, and at least six semester hours in education at the University of Maryland. (Staff.)

Note: The total number of credits which a student may earn in Ed. 187, Ed. 224, and Ed. 287 is limited to a maximum of twenty (20) semester hours.

**ED. 225. SCHOOL PUBLIC RELATIONS. (3)**

A study of the interrelationship between the community and the school. Public opinion, propaganda, and the ways in which various specified agents and agencies within the school have a part in the school public relations program are explored. (van Zwoll.)

**ED. 226. CHILD ACCOUNTING. (2)**

An inquiry into the record keeping activities of the school system, including an examination of the marking system. (van Zwoll.)

**ED. 227. PUBLIC SCHOOL PERSONNEL ADMINISTRATION. (3)**

A comparison of practices with principles governing the satisfaction of school personnel needs, including a study of tenure, salary schedules, supervision, rewards, and other benefits. (van Zwoll.)

**ED. 228. INTRODUCTION TO STUDENT PERSONNEL. (2)**

Prerequisite, consent of instructor. (Same as Psych. 228). A systematic analysis of research and theoretical literature on a variety of major problems in the organization and administration of student personnel services in higher education. Included will be discussion of such topics as the student personnel philosophy in education, counseling services, discipline, housing student activities, financial aid, health, remedial services, etc. (Byrne, Magoon, Marx.)

**ED. 234. THE SCHOOL CURRICULUM. (2-3)**

A foundations course embracing the curriculum as a whole from early childhood through adolescence, including a review of historical developments, an analysis of conditions affecting curriculum change, an examination of issues in curriculum making, and a consideration of current trends in curriculum design. (Hovet.)

**ED. 235. PRINCIPLES OF CURRICULUM DEVELOPMENT. (3)**

Curriculum planning, improvement, and evaluation in the schools; principles for the selection and organization of the content and learning experiences; ways of working in classroom and school on curriculum improvement. (Hovet, V. Anderson.)



## EDUCATION

### ED. 237. CURRICULUM THEORY AND RESEARCH. (2)

The school curriculum considered within the totality of factors affecting pupil behavior patterns, an analysis of research contributing to the development of curriculum theory, a study of curriculum theory as basic to improved curriculum design, the function of theory in guiding research, and the construction of theory through the utilization of concepts from the behavior research disciplines.

(Hovet.)

### ED. 241. PROBLEMS IN THE TEACHING OF READING. (3)

A. Elementary Schools

B. Secondary Schools

Implications of current theory and the results of research for the teaching of reading. Attention is given to all areas of development reading instruction, with special emphasis of persistent problems.

(Massey.)

### ED. 242. COORDINATION IN WORK-EXPERIENCE PROGRAMS. (2)

Surveys and evaluates the qualifications and duties of a teacher-coordinator in a work-experience program. Deals particularly with evolving patterns in city and county schools in Maryland, and is designed to help teacher-coordinators, guidance counselors, and others in the supervisory and administrative personnel concerned with functioning relationships of part-time cooperative education in a comprehensive educational program.

(Merrill.)

### ED. 245. INTRODUCTION TO RESEARCH. (2)

Intensive reading, analysis, and interpretations of research, applications to teaching fields; the writing of abstracts, research reports, and seminar papers.

(Hovet.)

### ED. 248. SEMINAR IN INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. (2)

(See Ind. Ed. 248)

(Maley.)

### ED. 249. PERSONALITY THEORIES IN EDUCATION. (3)

Prerequisite, consent of instructor. Examination of constructs and research relating to major personality theories with emphasis on their significance for educators working with the behavior of individuals in school settings.

(Staff.)

### ED. 250. CASES IN PUPIL APPRAISAL. (3)

Prerequisite, Ed. 262. Collecting and interpreting non-standardized pupil appraisal data; synthesis of all types of data through case study procedures.

(Marx.)

### ED. 251. INTERMEDIATE STATISTICS IN EDUCATION. (3)

Prerequisite, Education 151 or equivalent. A study of the basic statistical techniques used for graduate research in education, including tests of significance and sampling techniques. Necessary arithmetic skills are developed as part of the course.

(Stunkard.)

### ED. 253. OCCUPATIONAL CHOICE THEORY AND INFORMATION. (3)

Prerequisite, Ed. 161. Research and theory related to occupational and educational decisions; school programs of related information and other activities in occupational decisions.

(Byrne.)



- ED. 254. ORGANIZATION AND ADMINISTRATION OF PUPIL SERVICES. (2)  
Prerequisite, Ed. 261 or permission of instructor. Instilling the guidance point of view and implementing guidance practices.

(Byrne, Marx.)

- ED. 255, 256. ADVANCED LABORATORY EXPERIENCES IN READING INSTRUCTION. (3, 3)

The first semester of the course deals with diagnostic techniques. Each participant will assist in diagnosing reading disabilities and in recommending instructional programs for individual pupils. The second semester deals with instruction of pupils with reading disabilities. Each participant will plan and execute a program of instruction for an individual or a small group, applying findings of the preliminary diagnosis.

(Massey.)

- ED. 257. DIAGNOSIS AND REMEDIATION OF READING DISABILITIES. (3)

Prerequisites, Ed. 153 and Ed. 154. For those who wish to become corrective and remedial reading specialists. Concerned with clinical techniques, instructional materials, and remedial procedures useful to the reading specialist in (1) diagnosing serious reading difficulties and (2) planning programs of individual and small-group instruction. The work includes the writing of diagnostic and progress reports.

(Massey.)

- ED. 259. COUNSELING IN ELEMENTARY SCHOOLS. (3)

For elementary school counselors or advanced students preparing for elementary school counseling. The functions of a counselor in elementary school covering both general guidance and interview functions.

- ED. 260. SCHOOL COUNSELING: THEORETICAL FOUNDATIONS AND PRACTICE. (3)

Prerequisites, Ed. 161, 250, 253. Exploration of learning theories as applied to counseling in schools, and practices which stem from such theories.

(Byrne.)

- ED. 261. PRACTICUM IN COUNSELING. (2-6)

Prerequisites, Ed. 260 and permission of instructor. Sequence of supervised counseling experiences of increasing complexity. Limited to eight applicants in advance. Two hour class plus laboratory.

(Byrne, Marx.)

- ED. 262. MEASUREMENT IN PUPIL APPRAISAL. (3)

Prerequisite, Ed. 150. Study of group tests typically employed in school testing programs; discussion of evidence relating to the measurement of abilities.

(Gerberich.)

- ED. 265. THEORY OF MEASUREMENT. (2)

Prerequisites, Ed. 150 and Ed. 151. Treats such topics as theory and techniques used in various scaling methods, test analysis, predictive accuracy of scores, and equivalence of scores. For students desiring more advanced treatment of problems.

(Giblette.)

- ED. 267. CURRICULUM CONSTRUCTION THROUGH COMMUNITY ANALYSIS. (2)

Prerequisites, Ed. 163, 164, 165. Selected research problems in the field of community study with emphasis on Baltimore area.

(Staff.)

## EDUCATION

### ED. 269. COUNSELING AND PUPIL SERVICES SEMINAR. (2)

Enrollment by permission of instructor.

(Staff.)

### ED. 271. ADVANCED STATISTICS IN EDUCATION. (3)

Prerequisites, Ed. 251 or equivalent. Primarily for the education student desiring more advanced work in statistical methodology. Survey of major types of statistical design in educational research; application of multivariate statistical techniques to educational problems. (Stunkard.)

### ED. 275, 276. ADVANCED PROBLEMS IN ART EDUCATION. (3, 3)

These courses are centered about problems of teaching art in the elementary and secondary schools in terms of the philosophy of art education today, techniques and processes in the visual arts, and creative opportunities in the visual arts and in art education. The student also will have the opportunity to do special work centered about his problems in art education. (Lembach.)

### ED. 279. SEMINAR IN ADULT EDUCATION. (2)

(Wiggin.)

### ED. 280. RESEARCH METHODS AND MATERIALS. (2)

Research methodology for case studies, surveys, and experiments; measurement and statistical techniques; design, form, and style for theses and research reports. Primarily for advanced students and doctoral candidates. (Stunkard.)

### ED. 281. SOURCE MATERIALS IN EDUCATION. (2)

Bibliography development through a study of source materials in education, special fields in education, and for seminar papers and theses. (Wiggin.)

### ED. 287. INTERNSHIP IN EDUCATION. (12-16)

- |                               |                                    |
|-------------------------------|------------------------------------|
| a. Curriculum and Instruction | e. Student Personnel Services      |
| b. Educational Administration | f. Supervision                     |
| c. Industrial Arts Education  | g. Vocational-Industrial Education |
| d. Pupil Personnel Services   |                                    |

Internships in the major area of study are available to selected students who have teaching experience. The following groups of students are eligible: (a) any student who has been advanced to candidacy for the doctor's degree and (b) any student who receives special approval by the Education faculty for an internship, provided that prior to taking an internship, such student shall have completed at least sixty semester hours of graduate work, including at least six semester hours in education at the University of Maryland. Each intern is assigned to work on a full-time basis for at least a semester with an appropriate staff member in a cooperating school system, or educational institution or agency. The internship must be taken in a school situation different from the one where the student is regularly employed. The intern's sponsor maintains a close working relationship with the intern and the other persons involved.

Note: The total number of credits which a student may earn in Ed. 187, Ed. 224, and Ed. 287 is limited to a maximum of twenty (20) semester hours.

(Staff.)

**ED. 288. SPECIAL PROBLEMS IN EDUCATION. (1-6)**

First and second semesters and summer session. Master's or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for credit under this number. *Course card must have the title of the problem and the name of the faculty member under whom the work will be done.* (Staff.)

**ED. 290. DOCTORAL SEMINAR. (1-3)**

Prerequisite, passing the preliminary examination for a doctor's degree in education or recommendation of a doctoral adviser. Analysis of doctoral projects and theses, and of other ongoing research projects. A doctoral candidate may participate in the Seminar during as many University sessions as he desires, but may earn no more than three semester hours of credit in the Seminar. An Ed.D. candidate may earn in total no more than nine semester hours, and a Ph.D. candidate, no more than eighteen semester hours, in the Seminar and in Ed. 399. (Raths, Stunkard.)

**ED. 302. CURRICULUM IN HIGHER EDUCATION. (3)**

An analysis of research in curriculum and of conditions affecting curriculum change, with examination of issues in curriculum making based upon the history of higher education curriculum development. (Kelsey.)

**ED. 303. ORGANIZATION AND ADMINISTRATION OF HIGHER EDUCATION. (2)**

Organization and administration of higher education at the local, state, and federal levels; and an analysis of administrative relationships and functions and their effects on curriculum and instruction. (Kelsey.)

**ED. 304. STUDENT PERSONNEL AND THE COLLEGE STUDENT. (2)**

A demographic study of the characteristics of college students; as well as a study of their aspirations, values, and purposes. (Marx.)

**ED. 305. COLLEGE TEACHING. (3)**

Various methods of college instruction analyzed in relation to the curriculum and psychological basis. These would include the case study method, the demonstration method, the lecture method, the recitation method, teaching machines, teaching by television, and other teaching aids. (Kelsey and Staff.)

**ED. 309. SEMINAR IN PROBLEMS OF HIGHER EDUCATION. (2)**

(Kelsey.)

**ED. 310. SEMINAR IN STUDENT PERSONNEL. (2-6)**

An intensive study of the various student personnel functions. A means to integrate the knowledges from various fields as they relate to student personnel administration. (Marx.)

**ED. 399. RESEARCH—THESIS. (1-6)**

First and second semesters; summer session. Students who desire credit for a master's thesis, a doctoral dissertation, or a doctoral project should use this number. (Staff.)

## EARLY CHILDHOOD-ELEMENTARY EDUCATION

### *Courses Primarily for Freshmen and Sophomores\**

#### ECEED. 52. INTRODUCTION TO CHILDREN'S LITERATURE. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2)

Prerequisites, Eng. 1 and 2. A survey of literary materials for children and young people. Appropriate books for preschool, elementary, and junior high school pupils are considered, including picture-story, fiction, folk-lore, poetry, and informational books. Integrating literature with the curriculum, and methods of using books with children in the classroom. Aids and criteria for selection. (D. Brown.)

### *For Advanced Undergraduates\*\**

#### ECEED. 105. SCIENCE IN THE ELEMENTARY SCHOOL. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)

Laboratory fee, \$2.00. Designed to help teachers acquire general science understandings and to develop teaching materials for practical use in classrooms. Includes experiments, demonstrations, constructions, observations, field trips, and use of audio-visual materials. The emphasis is on content and method related to science units in common use in elementary schools. Formerly Sci. Ed. 105. (Blough.)

#### ECEED. 115. ACTIVITIES AND MATERIALS IN EARLY CHILDHOOD EDUCATION. (3)

First and second semesters. Prerequisites, C. Ed. 50, 51, or 110. Laboratory fee, \$5.00. Storytelling, selection of books, the use, preparation, and presentation of such raw materials as clay, paints (easel and finger), blocks, wood, and scrap materials. (Stant.)

#### ECEED. 116. MUSIC IN EARLY CHILDHOOD EDUCATION. (3)

First and second semesters. Prerequisite, Music 16 or equivalent. Creative experiences in songs and rhythms, correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level. (L. Brown.)

#### ECEED. 121. LANGUAGE ARTS IN THE ELEMENTARY SCHOOL. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)

Teaching of spelling, handwriting, oral and written expression, and creative expression. Special emphasis given to skills having real significance to pupils. (Seidman.)

#### ECEED. 122. SOCIAL STUDIES IN THE ELEMENTARY SCHOOL. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials, and utilization of environmental resources. (O'Neill, Weaver, Duffey.)

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\* See also H.D. Ed. 50, 51.

\*\* See also H.D. Ed. 110, 145.



**ECEED. 123. THE CHILD AND THE CURRICULUM. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)**

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning, readiness to learn; and adapting curriculum content and methods to maturity levels of children. (Seidman, Bennett.)

**ECEED. 124. MATHEMATICS IN THE ELEMENTARY SCHOOL. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)**

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes. (Schindler, F. Brown.)

**ECEED. 125. ART IN THE ELEMENTARY SCHOOL. (2-3)**

Concerned with art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools. (Lembach, Longley.)

**ECEED. 127. TEACHING IN THE ELEMENTARY SCHOOL. A.—NURSERY SCHOOL AND KINDERGARTEN; B.—ELEMENTARY SCHOOL. (2-6)**

An overview of elementary school teaching designed for individuals without specific preparation for elementary school teaching or for individuals without recent teaching experience. (Staff.)

**ECEED. 140. CURRICULUM AND INSTRUCTION. A.—COOPERATIVE NURSERY SCHOOL; B.—EARLY CHILDHOOD; C.—ELEMENTARY. (3)**

Philosophy of early childhood education, observation of the developmental needs at various age levels, with emphasis upon the activities, materials, and methods by which educational objectives are attained. (Stant and Staff.)

**ECEED. 143. FOREIGN LANGUAGE METHODS IN THE ELEMENTARY SCHOOL. (3)**

Graduate credit allowed by special arrangement and adviser's approval. Registration limited and based upon approval of adviser. Methods and techniques for developmental approach to the teaching of modern foreign languages in elementary schools. Use of realia development of oral-aural skills and understanding of young children in language development are stressed. (Mendeloff.)

**ECEED. 149. STUDENT TEACHING IN ELEMENTARY SCHOOLS. A.—NURSERY SCHOOL (4-8); B.—KINDERGARTEN (4-8); C.—ELEMENTARY (4-16)**

Fee, \$24 for students who do not pay the regular instructional materials fee. A grade point average of 2.30, a doctor's certificate indicating freedom from communicable diseases, and approval of the instructor required. Undergraduate credit only. No other courses may be taken during the semester of student teaching. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 16 credits full time for one semester is devoted to this work. For experienced teachers the time and credit may be reduced. May be taken for 4 hours credit in combination with a comparable student teaching assignment at the secondary level, by music education and physical education majors with the permission of their advisers. (Staff.)

## CHILDHOOD EDUCATION

### ECEED. 152. LITERATURE FOR CHILDREN AND YOUNG PEOPLE, ADVANCED. (3)

Prerequisite, Ed. 52, or approval of instructor. Development of literary materials for children and young people. Timeless and ageless books, and outstanding examples of contemporary publishing. Evaluation of the contributions of individual authors and illustrators and children's book awards. Study and practice in story-telling, and reading guidance in the classroom and library. (D. Brown.)

### ECEED. 153. THE TEACHING OF READING. A.—EARLY CHILDHOOD; B.—ELEMENTARY; C.—SECONDARY. (2-3)

Concerned with the fundamentals of development reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs. (Massey, Schindler, Fanning.)

### ECEED. 160. TEACHER-PARENT RELATIONSHIPS. (2-3)

A study of the methods and materials, trends and problems in establishing close home-school relationships. (Hymes.)

### *For Graduates*

### ECEED. 200. SEMINAR IN ELEMENTARY EDUCATION. (2)

Primarily for individuals who wish to write seminar papers. Enrollment should be preceded by at least 12 hours of graduate work in education. (Staff.)

### ECEED. 205. PROBLEMS IN TEACHING SCIENCE IN ELEMENTARY SCHOOLS. (2)

An opportunity to pursue special problems in curriculum making, course of study development, or other science teaching problems. Class members may work on problems related directly to their own school situations. (Blough, F. Brown.)

### ECCEd. 221. PROBLEMS OF TEACHING LANGUAGE ARTS IN ELEMENTARY SCHOOLS. (2)

Implications of current theory and results of research for the language arts in the elementary schools. (Seidman, Collins.)

### ECEED. 222. PROBLEMS OF TEACHING SOCIAL STUDIES IN ELEMENTARY SCHOOLS. (2)

Application to the social studies program of selected theory and research in the social sciences, emphasizing patterns of behavior, environmental influences, and critical thinking. (O'Neill, Weaver, Duffey.)

### ECEED. 224. PROBLEMS OF TEACHING MATHEMATICS IN ELEMENTARY SCHOOLS. (2)

Implications of theory and results of research for the teaching of arithmetic in the elementary schools. (Schindler, F. Brown.)

## HUMAN DEVELOPMENT EDUCATION

The staff of the Institute for Child Study offers a series of courses on human development and approaches to the direct study of children for members of the educational profession. Certain prerequisites are set up within the course sequences but these prerequisites are modified by the student's previous experience in direct study of children; this is done in order to provide an interrelated series of experiences leading toward synthesis and the ability to apply the principles of human development and behavior.

Undergraduate courses are designed both for prospective teachers (H.D. Ed. 100-101) and in-service teachers (H. D. Ed. 102, 103, 104; H. D. Ed. 112-13, 114-15, 116-17). The graduate offering contains two series. H. D. Ed. 200, 201, 202, 203 provide a basic core of four seminars for students majoring in the field, and also provide electives (beginning with H. D. Ed. 200—Introduction) for any graduate student interested in an overview of the field. The other seminars (H. D. Ed. 204 and above) are designed for emphasis in depth on the various areas of major processes and forces that shape the development and behavior of human beings, and are intended primarily for advanced graduate students. Along with most of the graduate seminars, H. D. Ed. 250 provides for concurrent application of scientific knowledge to the direct study of children as individuals and in groups.

## H. D. ED. 50. CHILD DEVELOPMENT I. (3)

First semester. An intensive study of the normal child's social, emotional, physical and intellectual development, from the prenatal period to the nursery school years. (Hymes.)

## H. D. ED. 51. CHILD DEVELOPMENT II. (3)

Second semester. A continuation of Child Development I through the early childhood years. (Hymes.)

*For Advanced Undergraduates and Graduates*H. D. ED. 100, 101.<sup>1</sup> PRINCIPLES OF HUMAN DEVELOPMENT I AND II. (3, 3)

H. D. Ed. 100 is prerequisite to H. D. Ed. 101. These courses give a general overview of the scientific principles that describe human development and behavior and relate these principles to the task of the school. A year-long study of an individual child is an integral part of the course and will require one half-day per week for observing children in nearby schools. *This course is designed to meet the usual certification requirements in Educational Psychology.*

(Staff.)

## H. D. ED. 102, 103, 104. CHILD DEVELOPMENT LABORATORY I, II, AND III. (2, 2, 2)

These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual, pre-

<sup>1</sup> Open only to students who have completed H.D.Ed. 100. Not offered after summer, 1964.



## HUMAN DEVELOPMENT EDUCATION

sents the accumulating data from time to time to the study group for criticism and group analysis and writes an interpretation of the dynamics underlying the child's learning behavior and development. Provides opportunity for teachers in service to earn credit for participation in their own local child study group. (Staff.)

### H. D. ED. 110. CHILD DEVELOPMENT III. (3)

First and second semesters. Developmental growth of the child from the pre-natal period through the early childhood years, with implications for home and school practice. For students in other colleges of the University. (Hymes.)

### H. D. ED. 112, 114, 116. SCIENTIFIC CONCEPTS IN HUMAN DEVELOPMENT I, II, III. (3, 3, 3)

Summer session. (Staff.)

### H. D. ED. 113, 115, 117. LABORATORY IN BEHAVIOR ANALYSIS I, II, III. (3, 3, 3)

Summer session. (Staff.)

### H. D. ED. 120, 121, 122. STUDY OF HUMAN DEVELOPMENT AND LEARNING IN SCHOOL SETTINGS I, II, III. (2, 2, 2)

A sequence of courses which enables in-service teachers and administrators to carry on advanced study of human development and learning principles in the continuous study and evaluation of several different phases of the school program over an extended period of time. (Staff.)

### H. D. ED. 145. GUIDANCE OF YOUNG CHILDREN. (3)

First and second semesters. Development of an appreciation and understanding of young children from different home and community backgrounds; study of individual and group problems. (Hymes.)

### *For Graduates*

### H. D. ED. 200. INTRODUCTION TO HUMAN DEVELOPMENT AND CHILD STUDY. (3)

Offers a general overview of the scientific principles which describe human development and behavior and makes use of these principles in the study of individual children. Each student will observe and record the behavior of an individual child throughout the semester and must have one half-day a week for this purpose. It is basic to further work in child study and serves as a prerequisite for advanced courses where the student has not had field work or at least six weeks of workshop experience in child study. When offered during the summer intensive laboratory work with case records may be substituted for the study of an individual child. (Prescott, Thompson.)

### H. D. ED. 201. BIOLOGICAL BASES OF BEHAVIOR. (3)

H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 201 or concurrently. Emphasizes that understanding human life, growth, and behavior depends on understanding the ways in which the body is able to capture, control, and expend energy. Application throughout is made to human body processes and implications for understanding and working with people. (Lawson, Morgan.)



## H. D. ED. 202. SOCIAL BASES OF BEHAVIOR. (3)

H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 202 or concurrently. Limitations learned by an individual as he grows up. These are considered in relation to the patterns of feeling and behaving which emerge as the result of growing up in one's social group. (Staff.)

## H. D. ED. 203. INTEGRATIVE BASES OF BEHAVIOR. (3)

H. D. Ed. 200 or its equivalent, H. D. Ed. 201 and H. D. Ed. 202 are prerequisite. Analyzes the organized and integrated patterns of feeling, thinking and behaving which emerge from the interaction of basic biological drives and potentials with one's unique experience growing up in a social group. (Peck.)

## H. D. ED. 204, 205. PHYSICAL PROCESSES IN HUMAN DEVELOPMENT. (3, 3)

Prerequisite, H. D. Ed. 200 or its equivalent. Describes in some detail the major organic processes of: conception, biological inheritance; differentiation and growth of the body; capture, transportation and use of energy, perception of the environment; coordination and integration of function; adaptation to unusual demands and to frustration; normal individual variation in each of the above processes. (Goering, Bowie.)

## H. D. ED. 206, 207. SOCIALIZATION PROCESSES IN HUMAN DEVELOPMENT I, II. (3, 3)

Prerequisite, H. D. Ed. 200 or its equivalent. Analyzes the processes by which human beings internalize the culture of the society in which they live. The major sub-cultures in the United States, their training procedures, and their characteristic human expressions in folk-knowledge, habits, attitudes, values, life-goals, and adjustment patterns are analyzed. Other cultures are examined to highlight the American way of life and to reveal its strengths and weaknesses. (Matteson, Kurtz.)

## H. D. ED. 208, 209. SELF PROCESSES IN HUMAN DEVELOPMENT I AND II. (3, 3)

Prerequisite, H. D. Ed. 200 or its equivalent. Analyzes the effects of the various physical and growth processes, affectional relationships, socialization processes, and peer group roles and status on the integration, development, adjustment, and realization of the individual self. This analysis includes consideration of the nature of intelligence and of the learning process; the development of skills, concepts, generalizations, symbolizations, reasoning and imagination, attitudes, values, goals and purposes; and the condition, relationships and experiences that are essential to full human development. The more common adjustment problems experienced in our society at various maturity levels, and the adjustment mechanisms used to meet them are studied. (Perkins, Mershon.)

## H. D. ED. 210. AFFECTIONAL RELATIONSHIPS AND PROCESSES IN HUMAN DEVELOPMENT. (3)

H. D. Ed. 200 or its equivalent must be taken before or concurrently. Describes the normal development, expression and influence of love in infancy, childhood, adolescence and adulthood. It deals with the influence of parent-child relationship involving normal acceptance, neglect, rejection, inconsistency, and over-protection upon health, learning, emotional behavior and personality adjustment and development. (Kyle.)

## HUMAN DEVELOPMENT EDUCATION

### H. D. ED. 211. PEER-CULTURE AND GROUP PROCESSES IN HUMAN DEVELOPMENT. (3)

H. D. Ed. 200 or its equivalent must be taken before or concurrently. Analyzes the processes of group formation, role-taking and status-winning. It describes the emergence of the "peer-culture" during childhood and the evolution of the child society at different maturity levels to adulthood. It analyzes the developmental tasks and adjustment problems associated with winning, belonging and playing roles in the peer group. (Lawson.)

### H. D. ED. 212, 214, 216. ADVANCED SCIENTIFIC CONCEPTS IN HUMAN DEVELOPMENT I, II, III. (3, 3, 3)

Summer session.

(Staff.)

### H. D. ED. 213, 215, 217. ADVANCED LABORATORY IN BEHAVIOR ANALYSIS I, II, III. (3, 3, 3)

Summer session.

(Staff.)

### H. D. ED. 221. LEARNING THEORY AND THE EDUCATIVE PROCESS. (3)

Prerequisites, H. D. Ed. 100 and 101 or equivalent. Provides a systematic review of the major theories of learning and their impact on education. Considers factors that influence learning. (Brandt.)

### H. D. ED. 230, 231. FIELD PROGRAM IN CHILD STUDY I AND II. (2-6)

Prerequisite, consent of instructor. Offers apprenticeship training preparing properly qualified persons to become staff members in human development workshops, consultants to child study field programs and coordinators of municipal or regional child study programs for teachers or parents. Extensive field experience is provided. In general this training is open only to persons who have passed their preliminary examinations for the doctorate with a major in human development or psychology. (Prescott.)

### H. D. ED. 250a, 250b, 250c. DIRECT STUDY OF CHILDREN. (1, 1, 1)

May not be taken concurrently with H. D. Ed. 102, 103, 104, or 200. Provides the opportunity to observe and record the behavior of an individual child in a nearby school. These records will be used in conjunction with the advanced courses in human development and this course will be taken concurrently with such courses. Teachers active in their jobs while taking advanced courses in human development may use records from their own classrooms for this course. A minimum of one year of direct observation of human behavior is required of all human development students at the master's level. This requirement may be satisfied by this course.

### H. D. ED. 260. SYNTHESIS OF HUMAN DEVELOPMENT CONCEPTS. (3)

Prerequisites, H. D. Ed. 204, 206 and 208. A seminar wherein advanced students work toward a personal synthesis of their own concepts in human growth and development. Emphasis is placed on seeing the dynamic interrelations between all processes in the behavior and development of an individual. (Prescott.)

### H. D. ED. 270. SEMINARS IN SPECIAL TOPICS IN HUMAN DEVELOPMENT. (2-6)

Prerequisite, consent of the instructor. An opportunity for advanced students to focus in depth on topics of special interest growing out of their basic courses in human development. (Staff.)

## INDUSTRIAL EDUCATION

## IND. ED. 1. MECHANICAL DRAWING. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. This course constitutes an introduction to orthographic multi-view and isometric projection. Emphasis is placed upon the visualization of an object when it is represented by a multi-view drawing and upon the making of multi-view drawings. The course carries through auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters. (Staff.)

## IND. ED. 2. WOODWORKING I. (3)

Six hours of laboratory per week. Laboratory fee, \$7.50. The course is designed to give the student an orientation into the woodworking industry with regard to materials, products, and processes while providing for skill development in the care and use of hand and power tools. (Schramm.)

## IND. ED. 9. INDUSTRIAL ARTS IN THE ELEMENTARY SCHOOL I. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. A course for pre-service and in-service elementary school teachers covering construction activities in a variety of media suitable for classroom use. The work is organized on the unit basis so that the construction aspect is supplemented by reading and other investigative procedures. (Herrick.)

## IND. ED. 10. INDUSTRIAL ARTS IN THE ELEMENTARY SCHOOL II. (2)

Prerequisite, Ind. Ed. 9. This is a continuation of Ind. Ed. 9. Two laboratory periods a week. Laboratory fee, \$5.00. It provides the teacher with opportunities to develop further competence in construction activities. Some of the basic phenomena of industry are studied, particularly those which apply to the manufacture of common products, housing, transportation and communication. (Herrick.)

## IND. ED. 12. SHOP CALCULATIONS. (3)

Shop Calculations is designed to develop an understanding and working knowledge of the mathematical concepts related to the various aspects of industrial education. The course includes phases of algebra, geometry, trigonometry, and general mathematics as applied to shop and drawing activities. (Herrick.)

## IND. ED. 21. MECHANICAL DRAWING. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 1. Laboratory fee, \$5.00. A course dealing with working drawings, machine design, pattern layouts, tracing and reproduction. Detail drawings followed by assemblies are presented. (Guy.)

## IND. ED. 22. WOODWORKING II. (3)

Six hours of laboratory per week. Prerequisite, Ind. Ed. 2, for industrial arts teacher education majors. Laboratory fee, \$7.50. The course is designed to give the student a comprehensive knowledge of machine production with emphasis on safety, industrial processes, and maintenance. (Schramm.)

## IND. ED. 23. ARC AND GAS WELDING. (1)

One laboratory period a week. Laboratory fee, \$5.00. A course designed to develop a functional knowledge of the principles and use of electric and



## INDUSTRIAL EDUCATION

acetylene welding. Practical work is carried on in the construction of various projects using welded joints. Instruction is given in the use and care of equipment, types of welded joints, methods of welding, importance of welding processes in industry, safety consideration, etc. (Harrison.)

### IND. ED. 24. SHEET METAL WORK. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. Articles are made from metal in its sheet form and involve the operations of cutting, shaping, soldering, riveting, wiring, folding, seaming, beading, burning, etc. The student is required to develop his own patterns inclusive of parallel line development, radial line development, and triangulation. (Crosby.)

### IND. ED. 26. GENERAL METAL WORK. (3)

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. This course provides experiences in constructing items from aluminum, brass, copper, pewter, and steel. The processes included are designing, lay out, heat treating, forming, surface decorating, fastening, and assembling. The course also includes a study of the aluminum, copper, and steel industries in terms of their basic manufacturing processes. (Staff.)

### IND. ED. 28. ELECTRICITY I. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. An introductory course to electricity in general. It deals with the electrical circuit, elementary wiring problems, the measurement of electrical energy, and a brief treatment of radio. (Guy.)

### IND. ED. 31. MECHANICAL DRAWING. (2)

Two laboratory periods a week. Prerequisites, Ind. Ed. 1 and 31. Laboratory fee, \$5.00. A course dealing with the topics enumerated in Ind. Ed. 21 but on a more advanced basis. The reading of prints representative of a variety of industries is a part of this course. (Luetkemeyer.)

### IND. ED. 33. AUTOMOTIVES I. (3)

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. Automotives I is a study of the fundamentals of internal combustion engines as applied to transportation. A study of basic materials and methods used in the automotive industry is included. Shop practices are built around the maintenance and minor repair of automobiles and smaller motor driven apparatus. (Merrill.)

### IND. ED. 34. GRAPHIC ARTS I. (3)

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. An introductory course involving experiences in letterpress and offset printing practices. This course includes typographical design, hand composition, proof reading, stock preparation, offset plate making, imposition, lock-up, stock preparation, presswork, linoleum, block cutting, paper marbelizing and bookbinding. (Tierney.)

### IND. ED. 41. ARCHITECTURAL DRAWING. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 1 or equivalent. Laboratory fee, \$5.00. Practical experience is provided in the design and planning of houses and other buildings. Working drawings, specifications, and blue-prints are featured. (Crosby.)



## IND. ED. 42. WOODWORKING III. (3)

Six hours of laboratory per week. Prerequisite, Ind. Ed. 22. Laboratory fee, \$7.50. The course is designed to give the student a comprehensive knowledge of contemporary woodworking technology with emphasis on mass production techniques, industrial research and materials testing. (Schramm.)

## IND. ED. 43. AUTOMOTIVES II. (3)

Three two-hour laboratory periods a week. Prerequisite, Ind. Ed. 33. Laboratory fee, \$7.50. This is an advanced course in automobile construction and maintenance covering the engine, fuel system, ignition system, chassis, and power train. Shop practices are built around the major repair and adjustment of the above groups. (Merrill.)

## IND. ED. 44. GRAPHIC ARTS II. (3)

Three two-hour laboratory periods a week. Prerequisite, Ind. Ed. 34. Laboratory fee, \$7.50. An advanced course designed to provide further experiences to letterpress and offset printing and to introduce other reproduction processes. Silk screen printing, dry print etching, mimeograph reproduction, and rubber stamp making are the new processes introduced in this course. (Tierney.)

## IND. ED. 48. ELECTRICITY II. (2)

Two laboratory periods a week. Laboratory fee, \$5.00. Principles involved in a-c and d-c electrical equipment, including heating measurements, motors, and controls, electrochemistry, the electric arc, inductance and reactance, condensers, radio, and electronics. (Harrison.)

## IND. ED. 50. METHODS OF TEACHING. (2)

(Offered at University College Centers.) For vocational and occupational teachers of shop work and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; measuring results and grading student progress in shop and related technical subjects. (Maley.)

## IND. ED. 60. OBSERVATION AND DEMONSTRATION TEACHING. (2)

(Offered in Baltimore.) Prerequisite, Educational Psychology and/or Methods of Teaching Vocational and Occupational Subjects. Primarily for vocational and occupational teachers. Sixteen hours of directed observation and demonstration teaching. Reports, conferences, and criticisms constitute the remainder of scheduled activities in this course.

## IND. ED. 66. ART METAL WORK. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 26, or equivalent. Laboratory fee, \$5.00. Advanced practicum. It includes methods of bowl raising and bowl ornamenting. (Crosby.)

## IND. ED. 69. MACHINE SHOP PRACTICE I. (3)

Two three-hour laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Laboratory fee, \$7.50. Bench work, turning, planing, milling, and drilling. Related technical information. (Herrick.)

## IND. ED. 84. ORGANIZED AND SUPERVISED WORK EXPERIENCES. (3)

See description under Industrial Education 124. (Staff.)

## INDUSTRIAL EDUCATION

### IND. ED. 89. MACHINE SHOP PRACTICE II. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 69 or equivalent. Laboratory fee, \$5.00. Advanced shop practicum in thread cutting grinding, boring, reaming, and gear cutting. Work-production methods are employed. (Herrick.)

### IND. ED. 101. OPERATIONAL DRAWING. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Laboratory fee, \$5.00. A comprehensive course designed to give students practice in the modern drafting methods of industry. (Luetkemeyer.)

### IND. ED. 105. GENERAL SHOP. (2)

Laboratory fee, \$5.00. Designed to meet needs in organizing and administering a secondary school general shop. Students are rotated through skill and knowledge developing activities in a variety of shop areas. (Herrick.)

### IND. ED. 108. ELECTRICITY III. (2)

Two laboratory periods a week. Prerequisites, Ind. Ed. 28, or equivalent. Laboratory fee, \$5.00. Experimental development of apparatus and equipment for teaching the principles of electricity. (Harrison.)

### IND. ED. 109. EXPERIMENTAL ELECTRICITY AND ELECTRONICS— A, B, C, D. (2, 2, 2, 2)

(Offered in Baltimore.)

(Guy.)

### IND. ED. 110. FOUNDRY. (1)

One laboratory period a week. Laboratory fee, \$5.00. Bench and floor molding and elementary core making. Theory and principles covering foundry materials, tools and appliances. (Maley.)

### IND. ED. 111. LABORATORY PRACTICUM IN INDUSTRIAL ARTS EDUCATION. (3)

Three two-hour laboratory periods a week. Prerequisite, eighteen semester hours of shopwork and drawing. Laboratory fee, \$7.50. A course devoted to the development of instructional materials and the refinement of instructional methods pertinent to the teaching of industrial arts at the secondary school level. (Maley.)

### IND. ED. 115. RESEARCH AND EXPERIMENTATION IN INDUSTRIAL ARTS. (3)

This is a laboratory-seminar course designed to develop persons capable of planning, directing, and evaluating effective research and experimentation procedures with the materials, products, and processes of industry. (Maley.)

### IND. ED. 121. INDUSTRIAL ARTS IN SPECIAL EDUCATION. (3)

Four hours laboratory per week, one hour lecture. Prerequisite, Sp. Ed. 170 and 171 or consent of instructor. Laboratory fee, \$5.00. This course provides experiences of a technical and theoretical nature in industrial processes applicable for classroom use. Emphasis is placed on individual research in the specific area of one major interest in special education. (Staff.)

### IND. ED. 124. ORGANIZED AND SUPERVISED WORK EXPERIENCES.

(3 credits for each internship period total: 6 credits). This is a work experience sequence planned for students enrolled in the curriculum, "Education for

## INDUSTRIAL EDUCATION

Industry." The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him in regard to the job opportunities which have optimum learning value. The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences. The time basis for each internship period is 6 forty-hour weeks or 240 work hours. Any one period of internship must be served through continuous employment in a single establishment. Two internships are required. The two internships may be served with the same business or industry. The completion for credit of any period of internship requires the employer's recommendation in terms of satisfactory work and work attitudes. More complete details are found in the handbook prepared for the student of this curriculum. (Merrill.)

### IND. ED. 125, 126. INDUSTRIAL TRAINING IN INDUSTRY I, II, (3, 3)

The first course is designed to provide an overview of the function of industrial training, type of programs, organization, development and evaluation. The second course (prerequisite the first course) is designed to study specific training programs in a variety of industries, plant program visitation, training program development, and analyses of industrial training research.

### IND. ED. 140 (ED. 140). CURRICULUM, INSTRUCTION, AND OBSERVATION. (3)

Major functions and specific contributions of industrial art education; its relation to the general objectives of the junior and senior high schools, selection and organization of subject matter in terms of modern practices and needs; methods of instruction; expected outcomes; measuring results; professional standards. Twenty periods of observation. (Luetkemeyer.)

### IND. ED. 143. INDUSTRIAL SAFETY EDUCATION I. (2)

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls. (Korb, Crosby.)

### IND. ED. 144. INDUSTRIAL SAFETY EDUCATION II. (2)

In this course exemplary safety practices are studied through conference discussions, group demonstration, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated. (Korb, Crosby.)

### IND. ED. 148. STUDENT TEACHING IN THE SECONDARY SCHOOLS. (2-8)

First and second semesters. See Ed. 148 for additional requirements. Fee, \$24 for students who do not pay the regular instructional materials fee. (Staff.)

### IND. ED. 150. TRAINING AIDS DEVELOPMENT. (3)

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such devices will be required. (Maley.)

## INDUSTRIAL EDUCATION

### IND. ED. 157. TESTS AND MEASUREMENTS. (2)

Prerequisite, Ed. 150 or consent of instructor. The construction of objective tests for occupational and vocational subjects. (Luetkemeyer.)

### IND. ED. 160. ESSENTIALS OF DESIGN. (2)

Two laboratory periods a week. Prerequisites, Ind. Ed. 1 and basic shop work. Laboratory fee, \$5.00. A study of the basic principles of design and practice in their application to the construction of shop projects. (Luetkemeyer.)

### IND. ED. 161. PRINCIPLES OF VOCATIONAL GUIDANCE. (2)

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students. (Staff.)

### IND. ED. 164. SHOP ORGANIZATION AND MANAGEMENT. (2)

This course covers the basic elements of organizing and managing an industrial education program including the selection of equipment and the arrangement of the shop. (Crosby, Snyder.)

### IND. ED. 165. MODERN INDUSTRY. (3)

This course provides an overview of manufacturing industry in the American social, economic, and culture pattern. Representative basic industries are studied from the viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, and the like. (Harrison.)

### IND. ED. 166. EDUCATIONAL FOUNDATIONS OF INDUSTRIAL ARTS. (2)

A study of the factors which place industrial arts education in any well-rounded program of general education. (Luetkemeyer.)

### IND. ED. 167. PROBLEMS IN OCCUPATIONAL EDUCATION. (2)

The purpose of this course is to secure, assemble, organize, and interpret data relative to the scope, character, and effectiveness of occupational education. (Staff.)

### IND. ED. 168. TRADE OR OCCUPATIONAL ANALYSIS. (2)

This course should precede Ind. Ed. 169. Provides a working knowledge of occupational and job analysis which is basic in organizing vocation-industrial courses of study. (Snyder.)

### IND. ED. 169. COURSE CONSTRUCTION. (2)

Surveys and applies techniques of building and reorganizing courses of study for effective use in vocational and occupational schools. (Staff.)

### IND. ED. 170. PRINCIPLES OF VOCATIONAL EDUCATION. (2)

This course develops the vocational education movement as an integral phase of the American program of public education. (Staff.)

### IND. ED. 171. HISTORY OF VOCATIONAL EDUCATION. (2)

An overview of the development of vocational education from primitive times to the present. (Luetkemeyer.)



## INDUSTRIAL EDUCATION

### IND. ED. 175. RECENT TECHNOLOGICAL DEVELOPMENTS IN PRODUCTS AND PROCESSES. (3)

This course is designed to give the student an understanding of recent technological developments as they pertain to the products and processes of industry. The nature of the newer products and processes is studied as well as their effect upon modern industry and/or society. (Crosby.)

### *For Graduates*

### IND. ED. 207. PHILOSOPHY OF INDUSTRIAL ARTS EDUCATION. (3)

This course is intended to assist the student in his development of a point of view in regard to industrial arts and its relationship with the total educational program. He should thereby, have a "yardstick" for appraising current procedures and proposals and an articulateness for his own professional area. (Harrison.)

### IND. ED. 214. SCHOOL SHOP PLANNING AND EQUIPMENT SELECTION. (3)

This course deals with principles involved in planning a school shop and provides opportunities for applying these principles. Facilities required in the operation of a satisfactory shop program are catalogued and appraised. (Tierney.)

### IND. ED. 216. SUPERVISION OF INDUSTRIAL ARTS. (2)

(Tierney.)

### IND. ED. 220. ORGANIZATION, ADMINISTRATION AND SUPERVISION OF VOCATIONAL EDUCATION. (2)

This course surveys objectively organization, administration, supervision, curricular spread and view point, and the present status of vocational education. (Staff.)

### IND. ED. 240. RESEARCH IN INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. (2)

This is a course offered by arrangement for persons who are conducting research in the areas of industrial arts and vocational education. (Staff.)

### IND. ED. 241. CONTENT AND METHOD OF INDUSTRIAL ARTS. (3)

Various methods and procedures used in curriculum development are examined and those suited to the field of Industrial Arts education are applied. Methods of and devices for industrial arts instruction are studied and practiced. (Maley.)

### IND. ED. 248. SEMINAR IN INDUSTRIAL ARTS AND VOCATIONAL EDUCATION.

(Staff.)

### IND. ED. 250. TEACHER EDUCATION IN INDUSTRIAL ARTS. (3)

This course is intended for the Industrial Arts teacher educator at the college level. It deals with the function and historical development of Industrial Arts Teacher education. Other areas of content include administration program and program development, physical facilities and requirements, staff organization and relationships, college-secondary school relationships, philosophy and evaluation. (Harrison.)

## LIBRARY SCIENCE EDUCATION

*For Advanced Undergraduates and Graduates***L. S. ED. 120. INTRODUCTION TO LIBRARIANSHIP. (3)**

An overview of the library profession. Development of public, academic, special and school library services. History of books and libraries. The library as a social institution. The impact of communication media on society. Philosophy of librarianship. Professional standards organizations and publications.

(D. Brown.)

**L. S. ED. 122. BASIC REFERENCE AND INFORMATION SOURCES. (3)**

Evaluation, selection, and utilization of information sources, in subject areas, including encyclopedias, dictionaries, periodical indexes, atlases, yearbooks. Study of bibliographical methods and form.

(D. Brown.)

**L. S. ED. 124. BOOK SELECTION AND EVALUATION FOR CHILDREN AND YOUTH. (3)**

Principles of book selection for school libraries and children's collections. Book selection aids and reviewing media. Influence of the community and curriculum on selection. Evaluation of publishers editions, translations, series.

(D. Brown.)

**L. S. ED. 126. CATALOGING AND CLASSIFICATION OF LIBRARY MATERIALS. (3)**

Principles and practice in the organization of library materials. Dewey Decimal Classification, rules for the dictionary catalog, Sears subject headings. Treatment of non-book materials. Cataloging aids and tools.

(D. Brown.)

**L. S. ED. 128. SCHOOL LIBRARY ADMINISTRATION AND SERVICE. (3)  
(3 hours)**

Acquisition, circulation, utilization and maintenance of library materials. Organization of effective school library programs. School library quarters and equipment. Publicity and exhibits. Evaluation of library services.

(D. Brown.)

**I. S. ED. 130. LIBRARY MATERIALS FOR CHILDREN. (3)**

Reading interests of children. Advanced study of children's literature. Survey of informational materials in subject fields including: books, periodicals, films, filmstrips, records, pictures, pamphlet materials.

(D. Brown.)

**L. S. ED. 132. LIBRARY MATERIALS FOR YOUTH. (3)**

Reading interests of young people. Literature for adolescents. Informational materials in subject fields including: books, periodicals, films, filmstrips, records, pictures, pamphlet materials.

(D. Brown.)

## SECONDARY EDUCATION

## GENERAL AND ACADEMIC EDUCATION

## SEC. ED. 130. THE JUNIOR HIGH SCHOOL. (2-3)

A general overview of the junior high school. Purposes, functions and characteristics of this school unit; a study of its population, organization, program of studies, methods, staff, and other topics, together with their implications for prospective teachers. (Grambs.)

## SEC. ED. 133\*. METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS. (2-3)

Designed to give practical training in the everyday teaching situations. Use of various lesson techniques, audio and visual aids, reference materials, and testing programs and the adaption of teaching methods to individual and group differences. Present tendencies and aims of instruction in the social studies. (Risinger, Campbell.)

## SEC. ED. 134. MATERIALS AND PROCEDURES FOR THE SECONDARY SCHOOL CORE CURRICULUM. (3)

Laboratory fee, \$1.00. This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. (Grambs.)

## SEC. ED. 137\*. METHODS OF TEACHING MATHEMATICS IN SECONDARY SCHOOLS. (3)

Considers the methods and procedures for presenting secondary mathematics in a meaningful way. Special attention will be given to the new experimental materials which have been prepared for grades 7-12 and the techniques needed to teach these courses. (Garstens, Mayor.)

## SEC. ED. 138\*. METHODS OF TEACHING SCIENCE IN SECONDARY SCHOOLS. (3)

Laboratory fee, \$2.00. Considers such topics as the objectives, selection, organization, and presentation of subject matter, appropriate classroom methods and procedures, instructional materials and evaluation of learning experiences in the areas of science. (Lockard.)

## SEC. ED. 140. CURRICULUM, INSTRUCTION, AND OBSERVATION. (3)

First and/or second semesters. Offered in separate sections for the various subject matter areas namely, English, social studies, foreign language, science, mathematics, art education, business education, home economics education, industrial education, music education, and physical education. Registration cards must include the subject-matter area as well as the name and number of the course. The objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks, and other instructional materials.

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\* This course is designed for teachers in service and is not open to regular undergraduate students.

## ACADEMIC EDUCATION

measurement, and other topics pertinent to the particular subject matter area are treated. Twenty periods of observation. Students must reserve all day each Wednesday for observation in public schools. (Staff.)

### SEC. ED. 141\*. METHODS OF TEACHING ENGLISH IN SECONDARY SCHOOLS. (3)

Content and method in teaching the English language arts. (Bryan.)

### SEC. ED. 142. TEACHING THE AUDIO-LINGUAL SKILLS IN FOREIGN LANGUAGES. (3)

Graduate credit allowed by special arrangement and adviser's approval. Designed for high school teachers. Methods in making and using tape recordings, using electronic laboratories, developing oral-aural skills and direct approach to language teaching are emphasized. (Mendeloff.)

### SEC. ED. 145. PRINCIPLES AND METHODS OF SECONDARY EDUCATION. (3)

First and second semesters; summer session. This course is concerned with the principles and methods of teaching in junior and senior high schools. Instructional problems common to all of the subject fields are considered in relation to the needs and interests of youth, the urgent social problems of today, and the central values to which our society is committed.

(McClure, Grambs, Risinger.)

### SEC. ED. 148. STUDENT TEACHING IN SECONDARY SCHOOLS. (2-8)

First and second semesters. Fee, \$24 for students who do not pay the regular instructional materials fee. In order to be admitted to a course in student teaching, a student must have an overall grade point average of 2.30, a doctor's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor to the appropriate area. He must have been previously enrolled at the University of Maryland for at least one semester. Undergraduate credit only. Application forms for this course must be submitted to the appropriate adviser by the middle of the semester preceding the one in which an assignment is desired. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 8 credits, full time for one-half of the semester is devoted to this work. For experienced teachers, some teachers, some graduate students and students in physical education and music education who are planning to split student teaching assignment in elementary and secondary schools, the time and credit may be modified. (Staff.)

### *For Graduates*

### SEC. ED. 239. SEMINAR IN SECONDARY EDUCATION. (2)

(Risinger, V. Anderson, McClure.)

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\* This course is designed for teachers in-service and is not open to regular undergraduates.



**SEC. ED. 247. SEMINAR IN SCIENCE EDUCATION. (2)**

An opportunity to pursue special problems in curriculum making, course of study development, or other science teaching problems. Class members may work on problems related directly to their own school situations.

(Lockard.)

**SEC. ED. 268. SEMINAR IN EDUCATIONAL SOCIOLOGY. (2)**

(Risinger.)

**BUSINESS EDUCATION**

*For Advanced Undergraduates and Graduates*

**B. ED. 100. TECHNIQUES OF TEACHING OFFICE SKILLS. (3)**

First semester. An examination and evaluation of the aims, methods, and course contents of each of the office skill subjects offered in the high school curriculum.

(Patrick.)

**B. ED. 101. PROBLEMS IN TEACHING OFFICE SKILLS. (2)**

Problems in development of occupational competency, achievement tests, standards of achievement, instructional materials, transcription, and the integration of office skills.

(Patrick.)

**B. ED. 102. METHODS AND MATERIALS IN TEACHING BOOKKEEPING, AND RELATED SUBJECTS. (2)**

Important problems and procedures in the mastery of bookkeeping and related office knowledge and the skills including a consideration of materials and teaching procedures.

(Patrick.)

**B. ED. 104. BASIC BUSINESS EDUCATION IN THE SECONDARY SCHOOLS. (2)**

Includes consideration of course objectives; subject matter selection; and methods of organizing and presenting business principles, knowledge, and practices.

(Patrick.)

*For Graduates*

**B. ED. 200. ADMINISTRATION AND SUPERVISION OF BUSINESS EDUCATION. (3)**

Major emphasis on departmental organization and its role in the school program, curriculum, equipment, budget-making, supervision, guidance, placement and follow-up, school-community relationships, qualifications and selection of teaching staff, visual aids and in-service programs for teacher development. For administrators, supervisors, and teachers.

(Patrick.)

**B. ED. 205. SEMINAR IN BUSINESS EDUCATION. (2)**

The study and evaluation of the literature and research in business education.

(Patrick.)

**B. ED. 255. PRINCIPLES AND PROBLEMS OF BUSINESS EDUCATION. (2-3)**

Principles, objectives, and practices in business education; occupational foundations; current attitudes of business, labor and school leaders; general business education relation to consumer business education and to education in general.

(Patrick.)

## MUSIC EDUCATION

### B. ED. 256. CURRICULUM DEVELOPMENT IN BUSINESS EDUCATION. (2-3)

This course is especially designed for graduate students interested in devoting the summer session to a concentrated study of curriculum planning in business education. Emphasis will be placed on the philosophy and objectives of the business education program, and on curriculum research and organization of appropriate course content. (Staff.)

## HOME ECONOMICS EDUCATION

### *For Advanced Undergraduates and Graduates*

#### H. E. ED. 102. PROBLEMS IN TEACHING HOME ECONOMICS. (3)

First and second semesters. Prerequisite, H. E. Ed. 140. A study of the managerial aspects of teaching and administering a home-making program; the physical environment, organization, and sequence of instructional units, resource materials, evaluation, home projects. (Spencer.)

### *For Graduates*

#### H. E. ED. 120. EVALUATION OF HOME ECONOMICS. (3)

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction, and use. (Spencer.)

#### H. E. ED. 200. SEMINAR IN HOME ECONOMICS EDUCATION. (2)

(Spencer.)

#### H. E. ED. 202. TRENDS IN THE TEACHING AND SUPERVISION OF HOME ECONOMICS. (2-4)

Study of home economics programs and practices in light of current educational trends. Interpretation and analysis of democratic teaching procedures, outcomes of instruction, and supervisory practices. (Spencer.)

## MUSIC EDUCATION

### *For Advanced Undergraduates and Graduates*

#### MUS. ED. 125. CREATIVE ACTIVITIES IN THE ELEMENTARY SCHOOL. (2)

Prerequisite, Music 16 or consent of instructor. A study of the creative approach to singing, listening, playing, rhythmic activity, and composition. These topics are studied in correlation with other areas and creative programs. (Staff.)

#### MUS. ED. 128. MUSIC FOR THE ELEMENTARY CLASSROOM TEACHER. (2-3)

Prerequisite, Music 16 or consent of instructor. A study of the group activities and materials through which the child experiences music. The course is designed to aid the classroom teacher. It includes an outline of objectives and a survey of instructional methods. (Eisenstadt.)

**MUS. ED. 129. METHODS OF CLASS INSTRUMENTAL INSTRUCTION. (2)**

Two one-hour laboratories and one lecture per week. Prerequisites, or concurrent registration in Music 80, 81. Organization of and techniques for teaching beginning instrumental classes in the public school. (Berman.)

**MUS. ED. 132. MUSIC IN SECONDARY SCHOOLS. (2-3)**

Prerequisite, consent of instructor. A study of the music program in the secondary schools with an emphasis on methods and materials for general music. The needs in general music are surveyed, and the relationship of music to the general education program is investigated. (Eisenstadt.)

**MUS. ED. 139. MUSIC FOR THE ELEMENTARY SCHOOL SPECIALIST. (2)**

First semester. Prerequisite, consent of instructor. A survey of instructional materials; objectives; organization of subject matter; lesson planning methods and procedures in singing, listening, rhythms, simple instruments, and creative activities for the music specialist in the elementary school. (Eisenstadt.)

**MUS. ED. 155. ORGANIZATION AND TECHNIQUE OF INSTRUMENTAL CLASS INSTRUCTION. (2)**

Prerequisite, consent of instructor. Practical instruction in the methods of tone production, tuning, fingering, and in the care of woodwind and brass instruments. A survey of the materials and published methods for class instruction. (Henderson.)

**MUS. ED. 163. BAND TECHNIQUES AND ADMINISTRATION. (2)**

Prerequisites, Music 81 and 161. Two lectures and two laboratory hours per week. Intensive study of a secondary wind instrument and of rehearsal techniques. A survey of instructional materials, administrative procedures, and band pageantry will be included. (Henderson.)

**MUS. ED. 170. METHODS AND MATERIALS FOR CLASS PIANO INSTRUCTION. (2)**

The study of the principles and techniques of teaching class piano. The following groups, beginning and advanced, will be used for demonstrations: elementary school children, junior and senior high school students, adults. Special emphasis will be placed on the analysis of materials. (de Vermond.)

**MUS. ED. 171. STRING TEACHING IN THE PUBLIC SCHOOLS. (2)**

A study of the problems of organizing and developing the string program in the public schools. Emphasis is placed on exploratory work in string instruments, on the study of teaching techniques, and on the analysis of music literature for solo, small ensembles, and orchestra. (Berman.)

**MUS. ED. 173. THE VOCAL MUSIC TEACHER AND SCHOOL ORGANIZATION. (2)**

Prerequisite, practice teaching or teaching experience. Study of the function of the vocal music teacher in the elementary and secondary schools. Open to graduate students by permission of instructor. (Grentzer, Eisenstadt.)

**MUS. ED. 175. METHODS AND MATERIALS IN VOCAL MUSIC FOR SECONDARY SCHOOLS. (2-4)**

Prerequisite, consent of instructor. A survey of suitable vocal and choral repertoire for the high school. Problems of diction, interpretation, tone pro-

## MUSIC EDUCATION

duction, and phrasing. The course is designed primarily for choral directors and teachers of voice classes. The course may be repeated for credit since different repertoires are covered each time the course is offered. (Grentzer.)

### MUS. ED. 180. INSTRUMENTAL MUSIC FOR SECONDARY SCHOOLS. (2)

Prerequisite, consent of instructor. A survey of the repertoires for high school orchestra, band, and small ensemble. Problems of interpretation, intonation, tone quality, and rehearsal techniques. The course may be repeated for credit, since different repertoires are covered each time the course is offered. (Staff.)

#### *For Graduates*

### MUS. ED. 200. RESEARCH METHODS IN MUSIC AND MUSIC EDUCATION. (3)

The application of methods of research to problems in the fields of music and music education. The preparation of bibliographies and the written exposition of research projects in the area of the student's major interest. (Grentzer.)

### MUS. ED. 201. ADMINISTRATION AND SUPERVISION OF MUSIC IN THE PUBLIC SCHOOLS. (3)

The study of basic principles and practice of supervision and administration with emphasis on curriculum construction, scheduling, budgets, directing of in-service teaching, personnel problems, and school-community relationships. (Grentzer.)

### MUS. ED. 204. CURRENT TRENDS IN MUSIC EDUCATION. (3)

A survey of current philosophies and objectives of music in the schools. The scope and sequence of the music curricula, vocal and instrumental, on the elementary and secondary levels. (Grentzer.)

### MUS. ED. 205. SEMINAR IN VOCAL MUSIC IN THE ELEMENTARY SCHOOLS. (2)

A comparative analysis of current methods and materials used in the elementary schools. A study of the music curriculum as a part of the total school program, and of the roles of the classroom teacher and the music specialist. (Grentzer.)

### MUS. ED. 206. CHORAL CONDUCTING AND REPERTOIRE. (3)

The study and reading of choral literature of all periods, including the contemporary, suitable for use in school and community choruses. Style, interpretation, tone quality, diction, rehearsal and conducting techniques are analyzed. (Staff.)

### MUS. ED. 207. SEMINAR IN VOCAL MUSIC IN THE SECONDARY SCHOOLS. (2)

A comparative analysis of current methods and materials used in teaching junior and senior high-school classes in general music, history and appreciation, theory, and voice, and in directing choral groups and community singing. (Grentzer.)

### MUS. ED. 208. THE TEACHING OF MUSIC APPRECIATION. (3)

A study of the objectives for the elementary and secondary levels; the techniques of directed listening, the presentation of theoretical and biographical materials, course planning, selection and use of audio-visual aids and library materials, and the correlation between music and other arts. (Ulrich.)



MUS. ED. 209. SEMINAR IN INSTRUMENTAL MUSIC. (2)

A consideration of acoustical properties and basic techniques of the instruments. Problems of ensemble and balance, intonation, precision, and interpretation are studied. Materials and musical literature for orchestra, bands, and small ensembles are evaluated. (Staff.)

MUS. ED. 210. ADVANCED ORCHESTRATION AND BAND ARRANGING (SEMINAR). (2)

Prerequisite, Music 147 or the equivalent, or consent of the instructor. A study of arranging and transcription procedures in scoring for the orchestra and band. Special attention is given to the arranging problems of the instrumental director in the public schools. (Henderson.)

MUS. ED. 250. HISTORY AND AESTHETICS OF MUSIC EDUCATION. (3)

Prerequisite, permission of instructor. The study of the development of pedagogical practices in music education, their aesthetic implications and educational values. (Grentzer.)

## SPECIAL EDUCATION

### *For Advanced Undergraduates and Graduates*

SP. ED. 170. INTRODUCTION TO SPECIAL EDUCATION. (3)

Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures. (Hebeler.)

SP. ED. 171. CHARACTERISTICS OF EXCEPTIONAL CHILDREN. (3-6)

A. Mentally Retarded. B. Gifted. C. Perceptual Learning Problems. Prerequisite, Sp. Ed. 170 or equivalent. Studies the diagnosis, etiology, physical, social, and emotional characteristics of exceptional children. (Renz.)

SP. ED. 172. EDUCATION OF EXCEPTIONAL CHILDREN. (3-6)

A. Mentally Retarded. B. Gifted. C. Perceptual Learning Problems. Prerequisite, Sp. Ed. 171 or equivalent. Offers practical and specific methods of teaching exceptional children. Selected observation of actual teaching may be arranged. (Hebeler.)

SP. ED. 173. CURRICULUM FOR EXCEPTIONAL CHILDREN. (3-6)

A. Mentally Retarded. B. Gifted. Prerequisite, Sp. Ed. 171 or equivalent. Examines the principles and objectives guiding curriculum for exceptional children; gives experience in developing curriculum for these children; studies various curricula currently in use. (Hebeler.)

### *For Graduates*

SP. ED. 200. EXCEPTIONAL CHILDREN AND YOUTH. (3)

Prerequisite, consent of instructor. Deals primarily with research relevant to the intellectual, psychological, physical, and emotional characteristics of exceptional children. (Renz.)

## SPECIAL EDUCATION

### SP. ED. 205. THE EXCEPTIONAL CHILD AND SOCIETY. (3)

Prerequisite, Sp. Ed. 200 or consent of instructor. Relationship of the role and adjustment of the child and/or adult and exceptionality to societal characteristics. (Renz.)

### SP. ED. 210. ADMINISTRATION AND SUPERVISION OF SPECIAL EDUCATION PROGRAMS. (3)

Prerequisite, consent of instructor. Consideration of the determination, establishment and function of educational programs for exceptional children for administrative and supervisory personnel. (Hebeler.)

### SP. ED. 215. EVALUATION AND MEASUREMENT OF EXCEPTIONAL CHILDREN AND YOUTH. (3)

Prerequisite, Ed. 150, 151, Sp. Ed. 200.

Deals with the understanding and interpretation of the results of psychological and educational tests applicable for use with exceptional children. (Renz.)

### SP. ED. 220. EDUCATIONAL DIAGNOSIS AND PLANNING FOR EXCEPTIONAL CHILDREN AND YOUTH. (3)

Prerequisite, Sp. Ed. 215. Deals with the identification of learning characteristics of exceptional children and the planning of appropriate programs. (Hebeler.)

### SP. ED. 225. PROBLEMS IN THE EDUCATION OF THE MENTALLY RETARDED. (3)

Prerequisite, 9 hours Sp. Ed. including Sp. Ed. 200, or consent of instructor. Consideration of the pertinent psychological, educational, medical, sociological and other relevant research and theoretical material relevant to the determination of trends, practices, regarding the mentally retarded. (Renz.)

### SP. ED. 230. PROBLEMS IN THE EDUCATION OF THE GIFTED. (3)

Prerequisite, 9 hours Sp. Ed. including Sp. Ed. 200 or consent of instructor. Consideration of the pertinent psychological, educational, medical, sociological and other relevant research and theoretical material relevant to the determination of trends, practices, regarding the gifted. (Hebeler.)

### SP. ED. 235. PROBLEMS IN THE EDUCATION OF CHILDREN WITH EMOTIONAL DISTURBANCES. (3)

Prerequisite, 9 hours Sp. Ed. including Sp. Ed. 200 or consent of instructor. Consideration of the pertinent psychological, educational, medical, sociological and other relevant research and theoretical material relevant to the determination of trends, practices, regarding the emotionally disturbed. (Hebeler.)

### SP. ED. 278. SEMINAR IN SPECIAL EDUCATION. (2)

Prerequisite, 9 hours in Special Education or consent of instructor. An overview of education of exceptional children. (Hebeler.)

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Note: For courses in physical education and health education see the catalog of the College of Physical Education, Recreation, and Health.

# THE 1964-66 FACULTY

**ACEY, Alfred E.,** Graduate Assistant in Education

B.A., Randolph-Macon College, 1957; B.A., University of the Philippines, 1960; M.S., Richmond Professional Institute, 1962.

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## FACULTY

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## FACULTY

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B.S., State College, California, Pennsylvania, 1943; M.A., University of Maryland, 1947; Ph.D., 1950.

**MARX, George L.**, Associate Professor of Education, and Associate Dean for Student Life and Acting Director, Office of Intermediate Registration

B.A., Yankton College, South Dakota, 1953; M.A., State University of Iowa, 1956; Ph.D., 1959.

**MASSEY, William J.**, Assistant Professor of Education, Department of Early Childhood-Elementary Education

A.B., Louisiana State Normal College, 1936; M.Ed., University of Missouri, 1951; Ed.D., 1955.

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B.S., Knox College, Galesburg, Illinois, 1928; M.A., University of Illinois, 1929; Ph.D., University of Wisconsin, 1933.

**McCLURE, L. Morris**, Professor of Education and Assistant Dean of the College of Education

B.A., Western Michigan University, 1940; M.A., University of Michigan, 1946; Ed.D., Michigan State University, 1953.

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B.S., University of Maryland, 1954; M.Ed., 1955.

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*CATALOG OF THE*  
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# UNIVERSITY CALENDAR, 1963-64

## *Fall Semester 1963*

September 16-20	Monday-Friday
September 23	Monday
November 27	Wednesday
December 1	Monday
December 20	Friday

Fall Semester Registration  
Instruction Begins  
Thanksgiving Recess Begins  
After Last Class  
Thanksgiving Recess Ends  
8 a.m.  
Christmas Recess Begins After  
Last Class

## *1964*

January 6	Monday
January 22	Wednesday
January 23-30	Thursday-Wednesday inclusive

Christmas Recess Ends 8 a.m.  
Pre-Examination Study Day  
Fall Semester Examinations

## *Spring Semester*

February 3-7	Monday-Friday
February 10	Monday
February 22	Saturday
March 25	Wednesday
March 26	Thursday
March 31	Tuesday
May 13	Wednesday
May 28	Thursday
May 29-June 5	Friday-Friday
May 30	Saturday
May 31	Sunday
June 6	Saturday

Spring Semester Registration  
Instruction Begins  
Washington's Birthday, Holiday  
Maryland Day, not a holiday  
Easter Recess Begins After Last  
Class  
Easter Recess Ends, 8 a.m.  
AFROTC Day  
Pre-Examination Study Day  
Spring Semester Examinations  
Memorial Day, Holiday  
Baccalaureate Exercises  
Commencement Exercises

## *Summer Session 1964*

June 22	Monday
June 23	Tuesday
July 4	Saturday
August 14	Friday

Summer Session Registration  
Summer Session Begins  
Independence Day, Holiday  
Summer Session Ends

## *Short Courses 1964*

June 15-19	Monday-Saturday
August 3-7	Monday-Saturday
September 8-11	Tuesday-Friday

Rural Women's Short Course  
4-H Club Week  
Firemen's Short Course



# UNIVERSITY CALENDAR, 1964-65

(Tentative)

## *Fall Semester 1964*

September 14-18	Monday-Friday	Fall Semester Registration
September 21	Monday	Instruction Begins
November 25	Wednesday	Thanksgiving Recess Begins After Last Class
November 30	Monday	Thanksgiving Recess Ends 8 a.m.
December 22	Tuesday	Christmas Recess Begins After Last Class

## *1965*

January 4	Monday	Christmas Recess Ends 8 a.m.
January 20	Wednesday	Pre-Examination Study Day
January 21-27	Thursday-Wednesday	Fall Semester Examinations

## *Spring Semester*

February 2-5	Tuesday-Friday	Spring Semester Registration
February 8	Monday	Instruction Begins
February 22	Monday	Washington's Birthday, Holiday
March 25	Thursday	Maryland Day, not a Holiday
April 15	Thursday	Easter Recess Begins After Last Class
April 20	Tuesday	Easter Recess Ends 8 a.m.
May 12	Wednesday	AFROTC Day
May 27	Thursday	Pre-Examination Study Day
May 28-June 4	Friday-Friday	Spring Semester Examinations
May 30	Sunday	Baccalaureate Exercises
May 31	Monday	Memorial Day, Holiday
June 5	Saturday	Commencement Exercises

## *Summer Session*

June 21	Monday	Summer Session Registration
June 22	Tuesday	Summer Session Begins
July 5	Monday	Independence Day, Holiday
August 13	Friday	Summer Session Ends

## *Short Courses*

June 14-18	Monday-Friday	Rural Women's Short Course
August 2-6	Monday-Friday	4-H Club Week
September 7-10	Tuesday-Friday	Firemen's Short Course

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Calvin Gaver (Dentistry), Chairman





# THE COLLEGE

Four-year programs outlined in this catalog lead to the degree of Bachelor of Science and Bachelor of Science with curriculum designation in aeronautical engineering, chemical engineering, civil engineering, electrical engineering, mechanical engineering, and fire protection. The engineering programs integrate these elements: (1) *basic sciences* including mathematics, physics, chemistry; (2) *engineering sciences* including mechanics of solids and fluids, engineering materials, thermodynamics, electricity and magnetism . . .; (3) *professional studies* in aeronautical, chemical, civil, electrical or mechanical engineering; (4) *liberal arts and social studies* in the American Civilization Program; and (5) certain other required subjects including air science and physical activities.

## GENERAL INFORMATION

Each program lays a broad base for *continued learning* after college in professional practice, in business or industry, in public service, or in graduate study and research. Representative work that engineering graduates do is suggested in the following paragraphs.

The aeronautical engineer deals with problems related to transporting people and things by air and through space. Aerodynamics, thermodynamics, and the mechanics of fluids and solids are among his basic sciences. He may apply them in some phase of planning or producing airplanes, missiles, or rockets, or in devising means to sustain and control their flight.

The chemical engineer applies chemistry to development and economic production of industrial chemicals, fuels, modern synthesis and certain alloys. He also applies mechanics, thermodynamics, reaction kinetics and aspects of nuclear science in unit operations and processes which are fundamental in the design and operation of industries in which material undergoes a change in its identity. He serves as a research worker, operator, manager, executive or consultant.

The civil engineer is primarily a planner, a designer, a builder, and a manager of public works and private enterprise. His professional service plays a major role in designing, supervising construction, or managing virtually every large building, bridge, dam, highway, railway, airport, water supply, waste disposal system, city plan, industrial plant, public works project.

The electrical engineer puts mathematics and the physical sciences to practical use in designing systems that generate, transmit and distribute electrical energy to transmit and receive "intelligence," as for example by telephone, radio, radar, television and computers; and to regulate and control mechanical and industrial processes by electronics and servomechanisms.

## GENERAL INFORMATION

The mechanical engineer figures ways to transmit power economically by heat or by mechanical systems. He applies the mechanics of fluids and solids, thermodynamics, and an understanding of the behavior of engineering materials under different conditions. As a professional engineer he devises processes for industrial production. As an industrial agent he serves as a supervisor, manager, or sales representative.

The specialist in fire protection is concerned with scientific, technical, and supervisory problems involved in safeguarding life and property from loss due to fire, explosion, and related hazards.

## ADMISSION REQUIREMENTS

Young men and women who wish to become *professional engineers* should enroll in an *academic* program in high school. A good academic record in high school is a basic requirement. Subjects that are recommended for admission are these:

Subjects	Recommended 4 units
English	
Mathematics (college preparatory)—including algebra (2), plane geometry (1), and trigonometry, or other ad- vanced mathematics	4
History and social sciences	2
Physical sciences	2
Foreign language—German or French	2
Unspecified academic subjects or suitable electives	2
Total	<hr/> 16

A complete statement of admission requirements and policies will be found in *An Adventure in Learning*. Application for admission should be made to the Director of Admissions, University of Maryland, College Park, Maryland.

## APPLICATION INFORMATION

**FALL SEMESTER:** All applications for full-time undergraduate admission for the Fall Semester at the College Park campus must be received by the University on or before July 15. Any student registering for seven (7) or more semester hours of work is considered a full-time student.

Under unusual circumstances, applications will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$15.00 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10.00 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission must be

received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

**SPRING SEMESTER:** The deadline for the receipt of applications for the Spring Semester is January 1.

**UNIVERSITY COLLEGE:** The application deadlines and fees *do not* apply to students registering in the evening classes offered by the University College.

**GRADUATE SCHOOL:** Application for admission to the Graduate School must be made by September 1 for the fall term and by January 1 for the spring term on blanks obtained from the Office of the Graduate School. Admission to the summer session is governed by the date listed in the Summer School catalog. The summer session deadline is generally June 1.

## ADVENTURE IN LEARNING

All freshmen in the College of Engineering enroll in essentially the same subjects as detailed in this catalog.

Each student will select his major-line department before he begins his sophomore year's work. Thereafter he will pursue the approved program of his department which leads to the bachelor's degree.

Advanced students who show promise of creativity and leadership in engineering, in the engineering sciences, and in teaching and research, are encouraged to continue in a program of graduate study leading to master's and doctor's degrees. There is an acute shortage of engineers with earned doctor's degrees. Able men and women *with gumption* will find challenging opportunities if they have such top-level preparation. The best time to plan and to begin preparing for these top-level opportunities is while one is in high school. Parents and teachers can help by leading, by pointing ways, and by maintaining proper standards of performance and conduct. But the lifelong *adventure in learning*, which is the true characteristic of the well-educated man or woman, demands systematic mental exercise throughout life. "Chance favors the prepared mind!"

## EXPENSES

Annual expenses of attending the University are approximately as follows: \$250.00 fixed charges, \$96.00 special fees, \$420.00 board; \$290.00 to \$320.00 lodging for Maryland residents, or \$340.00 to \$370.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students and is payable only once. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in



## GENERAL INFORMATION

lieu of the matriculation fee. A charge of \$400.00 (\$200.00 a semester) is assessed to all students who are non-residents of the State of Maryland. Students who are minors are considered to be resident students if at the time of their registration their parents have been domiciled in the State of Maryland for at least six months.

The status of the residence of a student is determined at the time of his first registration in the University and may not thereafter be changed by him unless, in the case of a minor, his parents move to and become legal residents of Maryland by maintaining such residence for at least six months. However, the right of the minor student to change from a non-resident status to resident status must be established by him prior to the registration period set for any semester.

Adult students are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least six months provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the six-months period referred to above except in those cases in which the adult was domiciled in Maryland for at least six months prior to his entrance into the armed service and was not enrolled in any school during that period.

The word "domicile" as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

*An Adventure in Learning*, the undergraduate catalog of the University, contains a detailed statement of fees and expenses and includes changes in fees as they occur. A copy may be requested from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park.

## AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science for a period of two semesters. The successful completion of this sequence is a prerequisite for graduation and must be taken by all eligible students during the first two semesters of attendance at the University. Transfer students who do not have the required two semesters of air science will be required to complete the sequence or take it until graduation whichever occurs first.

Selected students who wish to do so may carry advanced science courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning air science, refer to *University General and Academic Regulations*, a publication available to all entering undergraduate students.



## LIBRARIES

The libraries of the University are located on both the College Park and Baltimore campuses. They include the Theodore R. McKeldin Library and the many college and departmental libraries which house special collections. Because of the location of the University the large libraries of Baltimore and Washington are a valuable asset to graduate work. Arrangements can be made for personal work in the Enoch Pratt Library of Baltimore, the Library of Congress, the United States Department of Agriculture Library and the many fine collections of other government agencies in Washington.

Located in a geographical area rich in library resources, the University's libraries are well equipped to serve the engineering programs of study and research. The Engineering and Physical Sciences Library which supplements the Science and Technology Division of the general University Library is in the north wing of the Mathematics Building. This Library has a reading room on the first floor and three decks of book stacks above with a capacity of over 100,000 volumes. Stacks are open to all students. Individual study desks and lockers are assigned by the semester. Six small conference rooms, equipped with chalkboards, are available for group study. Carrels are reserved for graduate students. Micro-film and micro-card readers are maintained for use along with a complete photocopying service.

The Library collection covers the fields of engineering, mathematics, physics and industrial education. Its journal holdings represent over a thousand titles in science and technology; more than eight hundred are currently received. Several personal libraries of outstanding scientists and engineers have been acquired by the Library, the most extensive being the private collections of Max Born and Richard Von Mises. The Library is a designated depository of U.S. Atomic Energy Commission unclassified reports, including those of atomic energy establishments of Great Britain, Canada and other nations. Inter-library loan agreements assure the receipt of special materials from other libraries throughout the country.

## GENERAL FACILITIES

The College of Engineering, and departments in other colleges of the University, are well equipped for instruction and basic research in their respective areas of activity. There is excellent interdepartmental cooperation in furthering studies of mutual interest.

## SCHOLARSHIPS AND GRANTS-IN-AID

Scholarships and grants-in-aid are awarded each year to selected students in the College of Engineering. A list of such awards is published in the University publication *An Adventure in Learning*. Applications should be filed on forms which may be obtained from the Director, Office of Scholarships and Grants-in-Aid, University of Maryland, College Park, Maryland.

## GENERAL INFORMATION

### HONORS AND AWARDS

The College of Engineering schedules annually in the Spring an *Honors Day Convocation* to direct public attention to students and faculty who have distinguished themselves by scholarship and worthy activities. Families and friends of honorees, sponsors of scholarships and awards, alumni, and others interested in the University are cordially invited to this convocation.

### PROFESSIONAL AND HONOR SOCIETIES

Student branches of the following national engineering societies are established in the College of Engineering: American Institute of Aeronautics and Astronautics, American Institute of Chemical Engineers, American Society of Civil Engineers, Institute of Electrical and Electronics Engineers, American Society of Mechanical Engineers, and National Society of Fire Protection Engineers.

Each student is urged to be active in his engineering society. At meetings of professional societies he will meet distinguished engineers representing science, industry, practice, and public service. In discussions of scientific and engineering subjects he can learn to think for himself and to speak effectively. In teams and committees he can learn to work effectively with others. Indeed, it pays a student to be active in his student branch as it pays a graduate engineer to be active in his national engineering society.

Engineering students are encouraged to attend meetings of local sections of their professional and scientific societies in nearby Baltimore and Washington, to get acquainted with other men in their fields, and to visit nearby industries, public works, libraries and laboratories.

The following national honorary societies of particular interest to students in engineering and related sciences have active chapters at the University of Maryland: Tau Beta Pi, general engineering; Sigma Xi, scientific research; Phi Kappa Phi, senior scholarship; Eta Kappa Nu, electrical engineering; Pi Tau Sigma, mechanical engineering; Chi Epsilon, civil engineering.

### GRADUATE STUDY

An applicant for admission to the Graduate School must hold a bachelor's or a master's degree from a college or university of recognized standing. The applicant shall furnish an official transcript of his collegiate record which for unconditional admission must show credible completion of an adequate amount of undergraduate preparation of high quality for graduate work in his chosen field.

Application for admission to the Graduate School should be made not later than September 1 for the fall term and January 1 for the spring term

on blanks obtained from the office of the Dean of the Graduate School, University of Maryland, College Park, Maryland. Information on graduate work is published in the Graduate School Announcements.

Graduate Assistantships and Research Assistantships with stipends for service, and Fellowships, are sometimes available for study and research in the several departments of the College of Engineering. Only full-time students who have been admitted to the Graduate School are eligible for appointment. Preference is given to graduate students who are American citizens in view of limitations of available funds. Foreign students may be considered for vacancies after they have completed at least one year of full-time graduate study in residence at the University of Maryland. Letters of application for assistantships or fellowships should be directed to the head of the student's major department in the College of Engineering.

### FOR ADDITIONAL INFORMATION

A detailed explanation of the regulations of student and academic life may be found in the University publication titled, *University General and Academic Regulations*.

# REQUIRED COURSES

## STRUCTURE OF ENGINEERING CURRICULA

Courses in the normal curriculum or program and prescribed credit hours leading to the degree Bachelor of Science (with curriculum designation) are outlined on the following pages for each department in the College of Engineering. “. . . No student may modify the prescribed number of hours without special permission from the dean of his college.” The courses in each curriculum may be classified in the following categories:

1. Certain courses required of all undergraduate students in the University. Students who are not specifically exempted must schedule the following courses: Basic Air Sciences (see p. 4, this catalog) for men; physical activities (4 credits) for men and women and Personal and Community Health (4 credits) for women.
2. Courses in the American Civilization Program. These include English (12 credits); American history (6 credits); American government (3 credits); and approved electives (3 credits). See also *University General and Academic Regulations*.
3. Courses in the physical sciences—mathematics, chemistry, physics.
4. Collateral engineering courses—engineering sciences, and other courses approved for one curriculum but offered by another department.
5. Courses in the major department.

A student should obtain written approval for any substitution of courses from the department head and the dean of his college.

The courses in each engineering curriculum, as classified above, form a pattern of “sequences” and “parallels” in subject matter. In this respect, curricula in engineering may differ from curricula in other colleges. Some regulations which are generally applicable to all students (see *University General and Academic Regulations*) may need clarification for purposes of orderly administration among engineering students. The following administrative interpretations are illustrative.

## SUPPLEMENTAL NOTES

1. The responsibility for proper registration and for satisfying stated prerequisites for any course must rest with the student—as does the responsibility for proper achievement in courses in which he is enrolled. Each student should be familiar with the provisions of this catalog, *University General and Academic Regulations*, and other pertinent regulations.
2. A student who is enrolled for more than 6 semester-hours of work must register for physical education and/or Basic Air Science (Health for women students) each semester until he has fully satisfied the Univer-



## STRUCTURE OF ENGINEERING CURRICULA

sity's requirements in both subjects. These subjects may not be deferred and two courses in one area may not be scheduled the same semester.

3. Required courses in mathematics, physics, and chemistry have highest priority; and every engineering student must register for mathematics and chemistry—or mathematics and physics—until he has fully satisfied requirements of the College of Engineering in these subjects.

4. A student is advised to schedule a reduced load if his record of scholarship during the previous semester was unsatisfactory (a) because he failed courses, or (b) because his average during the previous semester was less than 2.0 ("C"). A student who is on probation may not schedule more than 16 semester-hours of work in any semester, *including* credit for physical education and military science. However, he may not defer the top-priority subjects noted in Paragraphs 2 and 3 above without written approval of the Dean.

5. A student has attained junior standing *on time*, if, among the first 63 applicable academic semester-hours he has scheduled, he has completed with an *average* of "C"=2.0 or better not less than 56 academic semester-hours which are listed in his curriculum for the freshman and sophomore years. Otherwise Academic Regulations, Section B, apply clearly.

6. A student who has not attained junior standing on time (as noted above) will be reported to the Registrar in accord with Academic Regulations Section B.

7. To be eligible for a bachelor's degree in the College of Engineering, a student must have an *average* of at least "C"=2.0—(a) in all subjects applicable to his degree, and (b) in all junior-senior courses in his major department. Responsibility for knowing and meeting all degree requirements for graduation in any curriculum rests with the student.

## BASIC ENGINEERING CURRICULUM

### BASIC AND ALTERNATE CURRICULA FOR FRESHMEN IN ENGINEERING

Students who *are* prepared to schedule Math. 19 (as indicated by results of the University's classification test) schedule the following *Basic Curriculum for Freshmen*:

FRESHMAN YEAR (BASIC)	—Semester—	
	I	II
Math. 19—Elementary Analysis .....	4	..
Math. 20—Calculus I .....	..	4
Chem. 1, 3—General Chemistry .....	4	4
E. S. 1—Introductory Engineering Science .....	4	..
E. S. 10—Mechanics .....	..	4
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	3	3
A. S. 2, 3—Basic Air Science (Men) .....	2	2
Hea. 2, 4—Personal and Community Health (Women) ..	2	2
Physical Activities .....	1	1
Total .....	18	18

Students who are *not* prepared to schedule Math. 19 (as indicated by results of the University's classification test) are *advised* to schedule Math. 1 and Eng. 1 in the Summer Session *before* the fall (first) semester. Otherwise they will schedule courses in the *Alternate Curriculum for Freshmen* in the following sequence:

FRESHMAN YEAR PLUS SUMMER (ALTERNATE)	—Semester—		—Summer—
	I	II	III
Math. 1—Review of High School Algebra....	0	..	..
Math. 19—Elementary Analysis .....	..	4	..
Math. 20—Calculus I .....	..	..	4
Chem. 1, 3—General Chemistry .....	4	4	..
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	3	3	..
E. S. 1—Introductory Engineering Science .....	..	4	..
E. S. 10—Mechanics .....	..	..	4
G & P 1—American Government <sup>1</sup> .....	3	..	..
A. S. 2, 3—Basic Air Science (Men) .....	2	2	..
Hea. 2, 4—Personal and Community Health (Women) .....	2	2	..
Physical Activities .....	1	1	..
Total .....	13	18	8

<sup>1</sup> Students who, on the basis of tests administered by the University of Maryland, have been released from 3, 6, or 9 hours in otherwise required courses in English, American History, or American Government shall select the replacements for these courses in accord with the current *General and Academic Regulations* governing The Program in American Civilization.

## AERONAUTICAL ENGINEERING

Aeronautical engineering involves the application of the laws of physics and mathematics to the problems of flight through the earth's atmosphere and outer space. The main sub-divisions of the field are aerodynamics, structures, and propulsion, although many problems, such as those of aeroelasticity and flutter, cut across dividing lines. The aerodynamicist must start out with an understanding of the laws of fluid flow at low speed, then modify these principles for the effects of higher speeds. At supersonic speeds, he must account for shock waves in flight at moderate altitudes and further changes in the flow at extremely high altitudes. At extremely high speeds he must add to this an understanding of the effects of ionization and molecular dissociation. The structures engineer is mainly concerned with the ability of the vehicle to withstand the forces and accelerations in flight. For high performance aircraft and missiles, he must consider the aerodynamic heating resulting from high-speed flight and allow for the weakening effect on materials. The propulsion engineer must deal with rocket, jet, or propellor systems which serve to accelerate the vehicle and to offset drag forces during flight.

The aeronautical engineer is continually beset with the problems of maintaining adequate margins of safety with a minimum of weight. The saving of even one pound of weight in fuel or structure of a missile is of such value as to justify the expenditure of many man-hours. These high dividends for thoroughness and precision in technical understanding are a source of gratification to the aeronautical engineer.

## AERONAUTICAL ENGINEERING CURRICULUM

SOPHOMORE YEAR	Semester	
	I	II
Math. 21, 22—Calculus II, III.....	4	4
Phys. 20, 21—General Physics.....	5	5
E. S. 20—Mechanics of Materials.....	..	3
E. S. 21—Dynamics .....	3	..
M. E. 1—Thermodynamics I.....	..	3
G. & P. 1—American Government <sup>1</sup> .....	3	..
American Civilization Elective, Group I <sup>1</sup> .....	..	3
Physical Activities .....	1	1
Total.....	16	19

<sup>1</sup> See current *General and Academic Regulations* for statement about the American Civilization Program and alternatives based on results of the University's classification tests.

## CHEMICAL ENGINEERING CURRICULUM

	—Semester—	
	I	II
<b>JUNIOR YEAR</b>		
Eng. 3, 4—Composition and World Literature . . . . .	3	3
Aero. E. 101—Aerodynamics I . . . . .	3	..
Aero. E. 102—Aerodynamics II . . . . .	..	2
Aero. E. 109—Flight Propulsion . . . . .	..	3
Aero. E. 113—Flight Structures . . . . .	..	4
E. S. 30—Materials Science . . . . .	3	..
M. E. 106—Transfer Processes . . . . .	3	..
M. E. 140—Engineering Analysis and Computer Program- ming . . . . .	..	3
Math. 64—Differential Equations for Engineers . . . . .	3	..
E. E. 51, 52—Principles of Electrical Engineering . . . . .	4	4
Total . . . . .	19	19
<b>SENIOR YEAR</b>		
Hist. 5, 6—History of American Civilization . . . . .	3	3
Technical Elective . . . . .	..	3
Aero. E. 107, 108—Aerospace Design . . . . .	4	4
Aero. E. 110—Flight Propulsion . . . . .	3	..
Aero. E. 111, 112—Electric Research . . . . .	2	2
Aero. E. 114—Flight Structures . . . . .	3	..
Aero. E. 115—Aerodynamics III . . . . .	3	..
Aero. E. 117—Aircraft Vibrations . . . . .	..	3
Aero. E. 118—Dynamics of Aerospace Vehicles . . . . .	..	3
Total . . . . .	18	18

## CHEMICAL ENGINEERING

Chemical engineering involves the application of sound engineering and economic principles—and basic sciences of mathematics, physics, and chemistry—to process industries concerned with the chemical transformation of matter. The chemical engineer is primarily concerned with research and process development leading to new chemical process ventures or a better understanding of existing ones; with the efficient operation of the complete chemical plant or its component units; with the technical service engineering required for improving and understanding chemical plant operation and the products produced; with the chemical sales and economic distribution of the chemical plant product; and with the general management and executive direction of chemical process industry plants and industrial complexes.

Because of this wide range of ultimate application, the chemical engineer finds interesting and diverse career opportunities in such varied fields as chemical (inorganic and organic), food processing and manufacture, metallurgical, nuclear and energy conversion, petroleum (refining, production, or petrochemical), and pharmaceutical industries. Additional



## CHEMICAL ENGINEERING CURRICULUM

opportunities are presented by the research and development activities of many public and private research Institutes and allied agencies.

The chemical engineering department offers a curriculum to prepare the undergraduate for a challenging career in any of the aforementioned fields of interest . . . a curriculum that will prepare him for continued graduate study or immediate industrial employment following the baccalaureate degree.

### CHEMICAL ENGINEERING CURRICULUM

	Semester	
	I	II
<b>SOPHOMORE YEAR</b>		
Math. 21, 22—Calculus II, III . . . . .	4	4
Phys. 20, 21—General Physics . . . . .	5	5
Chem. 17—Principles of Solution Chemistry . . . . .	2	..
Chem. 23—Inorganic Structures and Chemical Bonding . . . . .	..	2
Ch. E. 15—Chemical Engineering Analysis . . . . .	2	..
Ch. E. 50—Engineering Thermodynamics . . . . .	..	3
G. & P. 1—American Government <sup>1</sup> . . . . .	..	3
E. S. 21—Dynamics . . . . .	3	..
Physical Activities . . . . .	1	1
Total . . . . .	17	18
<b>JUNIOR YEAR</b>		
Eng. 3, 4—Composition and World Literature . . . . .	3	3
Chem. 35, 37—Elementary Organic Chemistry . . . . .	2	2
Chem. 36—Elementary Organic Laboratory . . . . .	2	..
Chem. 187, 189—Physical Chemistry . . . . .	3	3
Chem. 188, 190—Physical Chemistry Laboratory . . . . .	2	2
Math. 64—Differential Equations for Engineers		
or		
Ch. E. 116—Applied Mathematics in Chemical Engineering . . . . .	..	3
E. S. 20—Mechanics of Materials . . . . .	..	3
Ch. E. 109—Chemical Process Thermodynamics . . . . .	3	..
Ch. E. 127, 129—Transfer and Transport Processes I, II . . . . .	4	3
Total . . . . .	19	19

<sup>1</sup> See current *General and Academic Regulations* for statement about the American Civilization Program and alternatives based on results of the University's classification tests.

## CIVIL ENGINEERING CURRICULUM

SENIOR YEAR	Semester	
	I	II
H. 5, 6—History of American Civilization . . . . .	3	3
E. E. 51—Principles of Electrical Engineering . . . . .	4	..
Econ. 37—Economics . . . . .	3	..
E. S. 30—Materials Science . . . . .	..	3
Ch. E. 131—Transfer and Transport Processes III . . . . .	3	..
Ch. E. 133, 134—Seminar . . . . .	1	1
Ch. E. 137—Chemical Engineering Laboratory . . . . .	3	..
Ch. E. 145—Chemical Engineering Kinetics . . . . .	2	..
Ch. E. 147—Process Engineering and Design . . . . .	..	3
Ch. E. 149—Chemical Engineering Economics . . . . .	..	2
Ch. E. Approved Electives . . . . .	..	5
Total	19	17

## CIVIL ENGINEERING

Civil engineering is the professional hub of the construction and transportation industries which together are perhaps the largest and most diversified industries in America.

Professional civil engineers plan, design, and supervise construction of virtually every large enterprise involving construction, transportation, industrial facilities, and public works. Having planned and supervised construction of a major project, civil engineers are often selected to direct its operation as managers or executives.

Civil engineers design structures such as bridges, buildings, dams, power plants, tunnels . . . They plan and direct the use of water for cities, industries, flood control, irrigation, power . . . They plan water treatment plants, sewerage systems, and waste disposal facilities and supervise their operation . . . They manage municipal and regional development projects, public works, and private enterprise of great variety.

The civil engineer may work primarily in the office; primarily in the field; or he may divide his duty between field and office. To accomplish his ends as a creative planner and designer, he must be proficient in adapting mathematics, the physical sciences, and materials of construction. He must have a working knowledge of men and of machines. He must be an alert observer, with an eye for significance. He must be fair and resourceful in handling men, competent in devising adequate and economical solutions to a *whole* problem, responsible in handling funds, and practical in getting a job done adequately and on time. Adequacy, safety, economy, resourcefulness, integrity, and a sense of fitness are important considerations in everything a civil engineer does.

The foundations of professional engineering service are laid in college where in tackling a *project* the student learns to use mathematics and

## CIVIL ENGINEERING CURRICULUM

physical sciences; learns to communicate effectively in the *engineer's languages* of words, pictures, and numbers; learns to think and speak for himself; and learns to work in teams with others.

### CIVIL ENGINEERING CURRICULUM

	Semester	
	I	II
<b>SOPHOMORE YEAR</b>		
Math. 21, 22—Calculus II, III .....	4	4
Phys. 20, 21—General Physics .....	5	5
E. S. 20—Mechanics of Materials .....		3
E. S. 21—Dynamics .....	3	..
G. & P. 1—American Government <sup>1</sup> .....	3	..
American Civilization Elective, Group I <sup>1</sup> .....		3
Physical Activities .....	1	1
Total .....	16	16
<b>JUNIOR YEAR</b>		
Eng. 3, 4—Composition and World Literature .....	3	3
Math. 64—Differential Equations for Engineers .....	3	..
E. E. 50—Fundamentals of Electrical Engineering .....	3	..
C. E. 151—Materials of Engineering .....	3	..
C. E. 102—Fluid Mechanics .....	3	..
C. E. 110, 111—Surveying I, II .....	3	3
C. E. 140—Engineering Analysis and Computer Program- ming .....		3
C. E. 160—Structural Design .....		4
C. E. 180—Transportation .....		3
Approved Technical Electives <sup>2</sup> .....		3
Total .....	18	19
<b>SENIOR YEAR</b>		
H. 5, 6—History of American Civilization .....	3	3
M. E. 105—Principles of Mechanical Engineering .....		3
C. E. 101—Civil Engineering Planning .....		3
C. E. 150—Soil Mechanics .....	4	..
C. E. 161—Structural Design .....	4	..
C. E. 162, 163—Structural Analysis .....	3	3
C. E. 170—Water Supply .....	3	..
C. E. 171—Sewerage .....		4
Approved Technical Elective <sup>2</sup> .....	3	3
Total .....	20	19

<sup>1</sup> See current General and Academic Regulations for statement about the American Civilization Program and alternatives based on results of the University's classification tests.

<sup>2</sup> To provide depth in selected fields, students shall elect, with the advice and approval of the department, from such groups of technical courses as will be offered in the fields of advanced strength of materials, advanced fluid mechanics, highway engineering, special study in a particular field and 100-level courses in other departments of engineering or science.

## ELECTRICAL ENGINEERING CURRICULUM

### ELECTRICAL ENGINEERING

Electrical engineering education is a good preparation for any of several careers—in research, development, design, production, sales, technical management, or teaching—within the broad area of the useful application of electrical and electronic phenomena. An increasing number of electrical engineering graduates has in recent years gone into such fields as electronic digital computers, systems analysis, automatic control, telemetry and space navigation, control electronics, or solid-state devices such as the transistor. Many other smaller fields have attracted graduates with particular interests and abilities, for example, instrumentation for medical research, electromechanical transducer design, microminiaturization of electronic component assemblies, or antenna design. Many other fields such as electric power generation and transmission, radio, television, and telephone communication and switching offer many challenges to the electrical engineering graduate.

Increasingly, the boundary between the work of electrical engineers and applied physicists or applied mathematicians becomes less distinct. The various branches of engineering similarly interact with each other, as technical problems become more sophisticated, and require a combined attack from several disciplines. What, then, distinguishes the engineer from the scientist? The engineer occupies an intermediate position between science and the public, because, in addition to having a concern to get at the scientific principles of the situation, the engineer is often concerned with the timing, economics, and values that define the useful application of the principles.

In many cases, engineers have as a major duty the supervision of other engineers, and of technicians who will have been trained in some of the basic skills and practices of engineering. Hence electrical engineering, even in its more technical aspects, involves not only scientific knowledge, but also the ability and judgment to work effectively in various relationships with many other people. Clearly, the desirable attributes for success vary from one career choice to another within electrical engineering. The specialist in creative research and advanced development needs graduate work to the master's or doctor's degree, and can succeed in spite of lesser abilities at molding the opinions of others than are desirable for an engineering sales representative.

It is in this context of electrical engineering as a broad and diverse field that the goal of the Electrical Engineering Department is set—to provide an educational program and environment of challenge and adaptability, so that the able and willing student will be well prepared to enter the area of electrical engineering for which he is suited. As in most endeavors the rewards to the student will be a measure of the effort expended, multiplied by a coefficient of effectiveness.



## ELECTRICAL ENGINEERING CURRICULUM

## ELECTRICAL ENGINEERING CURRICULUM

SOPHOMORE YEAR	—Semester—	
	I	II
Math. 21, 22—Calculus II, III . . . . .	4	4
Phys. 20, 21—General Physics . . . . .	5	5
E. S. 21—Dynamics . . . . .	3	..
E. E. 1—Basic Electrical Engineering . . . . .	..	4
G. & P. 1—American Government <sup>1</sup> . . . . .	3	..
American Civilization Elective, Group I <sup>1</sup> . . . . .	..	3
Physical Activities . . . . .	1	1
Total . . . . .	16	17
JUNIOR YEAR		
Eng. 3, 4—Composition and World Literature . . . . .	3	3
E. S. 20—Mechanics of Materials . . . . .	3	..
C. E. 102—Fluid Mechanics (or M. E. 102) . . . . .	..	3
Math. 64—Differential Equations for Engineers . . . . .	3	..
E. E. 100—Alternating-Current Circuits . . . . .	4	..
E. E. 101—Engineering Electronics . . . . .	..	4
E. E. 107—Electricity and Magnetism . . . . .	3	..
E. E. 103—Random Variable . . . . .	..	2
E. E. 104—Long-Line Theory . . . . .	..	3
E. E. 108—Natural Circuit Behavior . . . . .	..	3
E. E. 106—Programming Digital Computers . . . . .	2	..
Total . . . . .	18	18
SENIOR YEAR		
H. 5, 6—History of American Civilization . . . . .	3	3
M. E. 100—Thermodynamics . . . . .	3	..
M. E. 107—Energy Conversion . . . . .	..	4
E. E. 118—Electrical Energy Conversion . . . . .	4	..
E. E. 100—Pulse Techniques . . . . .	..	3
E. E. 111, 112—Radio Engineering . . . . .	4	4
Technical Elective <sup>2</sup> . . . . .	..	3
E. E. 113—Network Synthesis . . . . .	3	..
Total . . . . .	17	17

<sup>1</sup> See current General and Academic Regulations for statement about the American Civilization Program and alternatives based on results of the University's classification tests.

<sup>2</sup> To be selected from the following group:

E. E. 110—Transistor Circuitry (3), either semester

E. E. 115—Feedback Control Systems (3)

E. E. 120—Electromagnetic Waves (3)

MECHANICAL ENGINEERING CURRICULUM

MECHANICAL ENGINEERING

The principal function of the mechanical engineer is to apply science and technology creatively to the design and manufacture of machines for the practical use of mankind. Any machine or manufactured product requires, basically, (1) the art and science of generating, transmitting, and utilizing mechanical power, and (2) research, development, designing, and the coordination of materials, personnel, and management. These basic requirements define mechanical engineering. The following *professional divisions* of the American Society of Mechanical Engineers give a good idea of types of work in which the mechanical engineer may become associated: applied mechanics, aviation, materials handling, management, oil and gas power, fuels, safety, hydraulics, metals engineering, heat transfer, process industries, production, machine design, lubrication, petroleum, nuclear engineering, railroads, power, textile, gas turbine power, wood industries, rubber and plastics, and instruments and regulators.

Because of the wide variety of engineering opportunities available to the mechanical engineer, the curriculum is designed to give the student a thorough training in the basic sciences: physics, chemistry, mathematics, solid and fluid mechanics, dynamics, thermodynamics, heat transfer, materials, electricity, nuclear technology, power, and design.

There are opportunities for mechanical engineers in all manufacturing enterprises. There are opportunities in research, design, production, testing, maintenance, and sales. There are opportunities for engineers who can devise manufactured products that utilize power in any form for the convenience of man. There are opportunities wherever there are factories. Since every town of moderate size has factories, the mechanical engineer may select the community where he wishes to make his home and be reasonably certain that he can find satisfactory employment there.

MECHANICAL ENGINEERING CURRICULUM

SOPHOMORE YEAR	—Semester—	
	I	II
Math. 21, 22—Calculus II, III.....	4	4
Phys. 20, 21—General Physics.....	5	5
E. S. 20—Mechanics of Materials.....	..	3
E. S. 21—Dynamics .....	3	..
M. E. 1—Thermodynamics I.....	..	3
G. & P. I—American Government <sup>1</sup> .....	3	..
American Civilization Elective, Group I <sup>1</sup> .....	..	3
Physical Activities .....	1	1
Total.....	16	19

<sup>1</sup> See current General and Academic Regulations for statement about the American Civilization Program and alternatives based on results of the University's classification tests.

## FIRE PROTECTION CURRICULUM

JUNIOR YEAR	Semester	
	I	II
English 3, 4—Composition and World Literature .....	3	3
E. E. 51, 52—Principles of Electrical Engineering .....	4	4
E. S. 30—Materials Science .....	3	..
Math. 64—Differential Equations for Engineers .....	3	..
M. E. 101—Dynamics of Machinery .....	2	..
M. E. 102—Fluid Mechanics I .....	3	..
M. E. 103—Materials Engineering .....	..	3
M. E. 104—Gas Dynamics .....	..	3
M. E. 106—Transfer Processes .....	..	3
M. E. 120—Measurements Laboratory .....	..	2
Total .....	18	18
SENIOR YEAR	I	
	II	
H. 5, 6—History of American Civilization .....	3	3
M. E. 150, 151—Energy Conversion .....	4	3
M. E. 152—Machine Design .....	3	..
M. E. 153—Elasticity and Plasticity, I .....	..	3
M. E. 154, 155—Engineering Experimentation .....	2	2
M. E. 156, 157—Mechanical Engineering Analysis and Design .....	3	4
Technical Elective .....	3	3
Total .....	18	18

### TECHNICAL ELECTIVES

M. E. 140—Engineering Analysis and Computer Program- ming .....	3	..
M. E. 162—Dynamics II .....	3	..
M. E. 164—Thermodynamics II .....	3	..
M. E. 166—Special Problems .....	3	..
M. E. 161—Environmental Engineering .....	3	..
M. E. 163—Fluid Mechanics II .....	3	..
M. E. 165—Automatic Controls .....	3	..
M. E. 167—Introduction to Operations Research I .....	3	..
M. E. 168, 169—Solid State for Engineers .....	3, 3	..

## FIRE PROTECTION

Fire protection is concerned with the scientific and technical problems of preventing loss of life and property from fire, explosion and related hazards, and of evaluating and eliminating hazardous conditions.

The fundamental principles of fire protection are relatively well defined and the application of these principles to a modern industrialized society has become a specialized activity. Control of the hazards in manufactur-

FIRE PROTECTION CURRICULUM

ing processes calls for an understanding not only of measures for fire protection but of the processes themselves. Often the most effective solution to the problem of safeguarding a hazardous operation lies in the modification of the process rather than in the installation of special extinguishing equipment. The expert in fire protection must be prepared to decide in any given case what is the best and most economical solution of the fire prevention problem. His recommendations are often based not only on sound principles of fire protection but on a thorough understanding of the special problems of the individual property.

Modern fire protection utilizes a wide variety of mechanical and electrical equipment which the student must understand in principle before he can apply them to special problems. The fire protection curriculum emphasizes the scientific, technical and humanitarian aspects of fire protection, and the development of the individual student.

The problems and challenges which confront the specialist in fire protection include the reduction and control of fire hazards due to processes subject to fire or explosion in respect to design, installation and handling, involving both physical and human factors; the use of buildings and transportation facilities to restrict the spread of fire and to facilitate the escape of occupants in case of fire; the design, installation and maintenance of fire detection and extinguishing devices and systems; and the organization and education of persons for fire prevention and fire protection.

FIRE PROTECTION CURRICULUM

SOPHOMORE YEAR	Semester	
	I	II
Math. 21, 22—Calculus II, III.....	4	4
Phys. 20, 21—General Physics.....	5	5
E. S. 20—Mechanics of Materials.....		3
E. S. 21—Dynamics.....	3	
M. E. 1—Thermodynamics I.....		3
G. & P. I—American Government <sup>1</sup> .....	3	
American Civilization Elective, Group I <sup>1</sup> .....		3
Physical Activities.....	1	1
Total.....	16	19

<sup>1</sup> See current General and Academic Regulations for statement about the American Civilization Program and alternatives based on results of the University's classification tests.



## AGRICULTURAL ENGINEERING

JUNIOR YEAR	Semester	
	I	II
Eng. 3, 4—Composition and World Literature.....	3	3
E. S. 30—Materials Science .....	3	..
Econ. 37—Fundamentals of Economics.....	3	..
B. A. 191—Property Insurance.....	..	3
C. E. 102—Fluid Mechanics (or M. E. 102).....	..	3
F. P. 104—Essentials of Fire Protection .....	3	..
F. P. 105—Fire Protection Organization.....	..	3
F. P. 110—Installations and Equipment.....	..	4
F. P. 120—Insurance Rating and Schedules.....	3	..
Approved Electives .....	3	3
Total.....	18	19
SENIOR YEAR	Semester	
	I	II
H. 5, 6—History of American Civilization.....	3	3
C. E. 170—Water Supply.....	3	..
Ch. E. 142—Environmental Consideration of Nuclear Engineering .....	..	3
Ind. Ed. 143, 144—Industrial Safety Education.....	2	2
F. P. 111—Special Hazards and Problems.....	4	..
F. P. 112—Fire Protection Fluids and Systems.....	3	..
F. P. 114—Fire Analysis .....	..	3
F. P. 117—Technical Projects .....	..	4
Approved Technical Electives.....	3	3
Total.....	18	18

## AGRICULTURAL ENGINEERING

The Department of Agricultural Engineering, in the College of Agriculture, offers a four-year academic program leading to the degree of Bachelor of Science. The program is described in the catalog of the College of Agriculture.

# COGNATE ACTIVITIES

Departments in the College of Engineering which contribute significantly to activities in education, research, and professional service—although they have no academic curricula—include the Institute of Fluid Dynamics and Applied Mathematics; the Department of Wind Tunnel Operations; and the Fire Service Extension Department. These Departments work closely with academic departments of the University in areas of common interest. The scope of work in each department area is outlined briefly in paragraphs which follow.

Fellowship grants and contracts for fundamental research contribute to the overall professional-scientific activity of the staff of the College. The staff of the College of Engineering available for research studies will be glad to discuss proposed problems of importance to industry and of public interest where means can be found for the cooperative researches; such studies may be undertaken with the approval of the administration of the University.

## INSTITUTE FOR FLUID DYNAMICS AND APPLIED MATHEMATICS

The Institute for Fluid Dynamics and Applied Mathematics does fundamental research in theoretical and experimental fluid dynamics and in the applications of mathematics.

Theoretical and experimental studies of gases at high temperatures and high-speed flow in fields of various nature and around bodies are being carried out with the aid of shock tubes of special design with particular attention being given to the new field of magneto gas dynamics. A low-turbulence wind tunnel is available for studies of turbulence. Other facilities make possible the investigation of vortex flow and of transition from laminar to turbulent motion. Work in mathematics ranges from classical hydro-dynamics to the modern theory of transonic flow, and includes problems in eigenvalues, elasticity, electrostatics and partial differential equations. A research program is under way in statistical mechanics, with emphasis on the theory of irreversible processes and the theory of solids. The research program of the Institute is partially supported by outside contracts.

The Institute cooperates in theoretical and experimental research with other scientific agencies and, insofar as its resources permit, offers its facilities to scholars in other institutions who may wish to spend their leave periods in study and research.

The faculty and staff of the Institute work closely with faculty and staff of other departments on problems of mutual interest. They join in weekly seminars and colloquia on research problems in applied mathematics and applied mechanics.

The faculty of the Institute, in cooperation with the faculty of other departments of the University, offer courses for students working toward advanced degrees. These courses form part of the regular departmental offerings and further information about them may be obtained from the Graduate School Announcements.

### WIND TUNNEL OPERATIONS

The Wind Tunnel Operations Department conducts a program of experimental research and development in cooperation with the aircraft industry, agencies of government, and other industries with problems concerning aerodynamics. Testing programs cover a variety of subjects including all types of aircraft, missiles, ordnance, parachutes, radar antennas, trucks, automobiles, structures, and exterior equipment subject to high winds.

The Department has a 7.75x11-foot wind tunnel that can be operated at speeds from 0 to 240 mph. This facility has powered model drive equipment, and auxiliary vacuum and high pressure air supplies for boundary layer control studies. Supporting shops include complete wood-working, machine shop, photographic, and instrumentation facilities.

The full time staff of the Department includes engineering, computing, shop, and technical operations personnel. This staff cooperates with other faculty and students in the College of Engineering on special problems of mutual interest.

### FIRE SERVICE EXTENSION DEPARTMENT

The Fire Service Extension Department provides in-service training for volunteer, municipal, and industrial firemen and serves in an advisory capacity in matters of fire prevention, fire protection, and fire safety regulations. Classes are conducted in Maryland by local instructors who work under the guidance of Senior Instructors of the Department. Basic training of 60 clock hours is given in the fundamentals of firemanship. An advanced course of 60 clock hours covers the technical field of fire prevention, control and extinguishment. A third section of 60 clock hours emphasizes related technical information. A training course of 42 clock hours for rescue operations is also available. An increasingly important program is that of establishing and improving fire prevention and fire protection in Maryland industry, institutions and mercantile establishments.

A four-day short course is held annually in September at the University. Specialized courses include instructor training, pump school series, hydraulics, aerial ladders. There are also conferences for fire company presidents, conferences for fire chiefs, and schools for fire officers.

Additional information may be obtained from the Director, Fire Service Extension Department, University of Maryland, College Park, Maryland.

## COGNATE ACTIVITIES

### OTHER RESEARCH LABORATORIES

The National Sand and Gravel Association and the National Ready Mixed Concrete Association have research laboratories on the campus. These agencies also sponsor fellowships for graduate students who will devote half-time to graduate study and half-time to research on approved projects in their respective areas of interest. Fellows will be selected from applicants who have been admitted to graduate study in some field of engineering. Applications for admission to graduate study should be made on forms that may be obtained from the Dean of the Graduate School, University of Maryland, College Park, Maryland.



# COURSE OFFERINGS

The University reserves the right to change any provisions or requirements at any time within the student's term of residence; or to withdraw or discontinue any course; or to ask a student to withdraw when it considers such action to be in the best interests of the University. If a scheduled course is withdrawn or discontinued, the fee charged for such course will be returned, and the corresponding fee for change in registration will not be charged.

Courses designated by numbers 1 to 99 are for undergraduates; above 200 for graduate students; and from 100 to 199 for advanced undergraduates and (subject to official approval) for graduates also.

A separate schedule of courses is issued each semester showing the hours, places of meeting, and other information required by the student in making out his program. These schedules for a particular semester are available during its period of registration.

The responsibility for proper registration and for satisfying stated prerequisites for any course must rest with the student—as does the responsibility for proper achievement in courses in which he is enrolled. Each student should be familiar with the provisions of this catalog, *University General and Academic Regulations*, and other pertinent regulations.

## AERONAUTICAL ENGINEERING

*Professors:* SHERWOOD, CORNING, WESKE, AND PAI.\*

*Associate Professor:* RIVELLO.

*Instructor:* REILLY.

*Lecturers:* LOBB, NICOLAIDES, AND WILSON.

### *For Advanced Undergraduates and Graduates*

#### AERO. E. 101. AERODYNAMICS I. (3)

First semester. Three lectures a week. Prerequisites, Phys. 21 and Math. 21. Basic fluid mechanics and aerodynamic theory. (Sherwood.)

#### AERO. E. 102. AERODYNAMICS II. (2)

Second semester. Two lectures a week. Prerequisite, Aero. E. 101. Elements of aerodynamics and application to engineering problems. (Sherwood.)

#### AERO. E. 107, 108. AEROSPACE DESIGN. (4, 4)

First and second semesters. Two lectures and two supervised calculation periods

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*Note.*—Changes in mathematics courses for engineering students initiated in September 1963 (from Math. 18-21 to Math. 19-22) will involve corresponding changes in prerequisites for follow-up courses as the Math. 19-22 sequence becomes fully operative.

\*Institute for Fluid Dynamics and Applied Mathematics.

## AERONAUTICAL ENGINEERING

a week. Prerequisites, E. S. 20, Aero. E. 102 and Aero. E. 113. Theory and methods of aerospace vehicle design, stability and control, airloads, and structural design. (Corning.)

### AERO. E. 109, 110. FLIGHT PROPULSION. (3, 3)

Two lectures and one laboratory period a week. Prerequisite, M. E. 1. Operating principles of piston, turbojet, turboprop, ramjet, and rocket engines. Thermodynamic processes and engine performance, aero-thermochemistry of combustion, fuels and propellants, energy for space flight. (Weske.)

### AERO. E. 111, 112. ELECTIVE RESEARCH. (2, 2)

One lecture and one laboratory period a week. Prerequisites, Aero. E. 102 and Aero. E. 113. Wind tunnel tests; structure tests. Written and oral reports on original research projects. (Staff.)

### AERO. E. 113, 114. FLIGHT STRUCTURES. (4, 3)

First semester, three lectures and one calculation period a week; second semester, three lectures a week. Prerequisites, E. S. 20 and Math. 64. Principles and problems of stress analysis and structural design of flight structures. (Rivello.)

### AERO. E. 115. AERODYNAMICS III. (3)

Prerequisite, Aero. E. 102. Elementary theory of the flow of a compressible gas at subsonic, supersonic and hypersonic speeds. (Sherwood.)

### AERO. E. 117. AIRCRAFT VIBRATIONS. (3)

Three lectures a week. Prerequisite, Math. 64. Vibration and other dynamic problems occurring in structures. Specific topics of study include the single degree of freedom system, damping, forced vibrations, critical frequency multiple degrees of freedom, and vibration isolation and absorption. (Corning.)

### AERO. E. 118. DYNAMICS OF AEROSPACE VEHICLES. (3)

Second semester. Prerequisites, Aero. E. 102 and 107. Study of the motions of orbital vehicles, and non-orbital glide and ballistic vehicles, through their entire trajectory of boost, orbit or glide, and re-entry. (Corning.)

## *For Graduates*

### AERO. E. 220, 221. AERODYNAMICS OF INCOMPRESSIBLE FLUIDS. (3, 3)

Prerequisites, Aero. E. 101, Aero. E. 102, Math. 64. Fundamental equations in fluid mechanics. Irrotational motion. Circulation theory of lift. Thin airfoil theory. Lifting line theory. Wind tunnel corrections. Propeller theories. Linearized equations in compressible flow. (Lobb.)

### AERO. E. 222, 223. AERODYNAMICS OF VISCOUS FLUIDS. (3, 3)

Prerequisites, Aero. E. 101, Aero. E. 102, Math. 64. Fundamental concepts. Navier-Stokes' equations. Simple exact solutions. Laminar boundary layer theory. Pohlhausen method. Turbulent boundary layer; mixing length and similarity theories. Boundary layer in compressible flow. (Weske.)

### AERO. E. 224, 225. AERODYNAMICS OF COMPRESSIBLE FLUIDS. (3, 3)

Prerequisites, Aero. E. 115, Math. 64. One dimensional flow of a perfect compressible fluid. Shock waves. Two-dimensional linearized theory of compressible flow. Two-dimensional transonic and hypersonic flows. Exact solutions of two dimensional isotropic flow. Linearized theory of three-dimensional potential

## AERONAUTICAL ENGINEERING

flow. Exact solution of axially symmetrical potential flow. One-dimensional viscous compressible flow. Laminar boundary layer of compressible fluids. (Pai.)

### AERO. E. 230, 231. THE AERODYNAMICS OF HIGH ALTITUDE VEHICLES. (3, 3)

Prerequisite, permission of instructor. Aerothermodynamic study of several types of high altitude, hypersonic vehicles including ballistic, boost-glide and satellite vehicles. Examination of problems in stability, control, boundary-layer growth, shockwave interactions and convective and radiative heating. (Wilson.)

### AERO. E. 232, 233. WAVE PROPAGATION IN GASES AND SOLIDS. (3, 3)

Prerequisite, permission of instructor. Application of method of characteristics to unsteady compressible flow. Study of isentropic and non-isentropic flows of both ideal and non-ideal gases. The Lagrange ballistic problem, detonation, the shock tube and spherical waves. Impact loading on elastic-plastic materials, the stopping shock, interactions and reflections in solids. Stress and strain produced in solids with varying cross-sectional area. (Seigel.)

### AERO. E. 234, 235. AEROSPACE FACILITIES AND TECHNIQUES. (3, 3)

Prerequisite, permission of instructor. Problems in supersonic and hypersonic tunnel development such as the aerodynamic design of nozzles, diffusers, storage systems and arc heaters. Shock tubes and shock tube wind tunnels. Development of ballistic ranges and basic considerations in the design of high-speed launchers. Instrumentation and data reduction. (Lobb.)

### AERO. E. 236, 237. HEAT TRANSFER PROBLEMS ASSOCIATED WITH HIGH VELOCITY FLIGHT. (3, 3)

Prerequisite, permission of instructor. Heat conduction in solids and thermal radiation of solids and gases. Analytic solutions to simple problems and numerical methods for solving complicated problems. Convective heating associated with laminar and turbulent boundary-layer flow. Heat transfer equations for selected body shapes such as cones and hemispheres. Real gas effects on convective heating. (Wilson.)

### AERO. E. 250, 251. ADVANCED FLIGHT STRUCTURES. (3, 3)

Prerequisites, Math. 64 and Aero. E. 113, 114, or permission of the instructor. Introduction to two dimensional theory of elasticity, energy methods, plate theory, theory of elastic instability. Aerodynamic heating of structures, thermal stresses, creep, creep bending and buckling, visco-elastic theory. (Rivello.)

### AERO. E. 260, 261. ADVANCED PROPULSION. (3, 3)

Prerequisites, M. E. 100; Aero. E. 109, 110. Special problems of thermodynamics and dynamics of aircraft power plants; jet, rocket and ramjet engines; plasma, ion and nuclear propulsion for space vehicles. (Weske.)

### AERO. E. 270, 271. FLIGHT DYNAMICS. (3, 3)

Prerequisites, Math. 64 and Aero. E. 114. Dynamics of a rigid body and applications to airplane dynamics. Generalized coordinates and Lagrange's equations. Vibrations of simple systems. Dynamics of elastically connected masses. Influence coefficients. Mode shapes and principal oscillations. Transient stresses in an elastic structure. Wind divergence and aileron reversal. Theory of two dimensional oscillating airfoil. Flutter problems. Corrections for finite span. Compressibility effects. (Nicolaidese.)

## AERONAUTICAL ENGINEERING, CHEMICAL ENGINEERING

### AERO. E. 290. SEMINAR.

(Credit in accordance with work outlined by Aeronautical Engineering staff).  
First and second semesters.

### AERO. E. 291. 292. SELECTED TOPICS IN AEROSPACE ENGINEERING. (3, 3)

Prerequisite, permission of instructor. Topics of current interest and recent advances in the field of aerodynamics.

### AERO. E. 399. RESEARCH.

(Credit in accordance with work outlined by Aeronautical Engineering staff.)  
First and second semesters. Prerequisite, graduate standing. (Staff.)

## CHEMICAL ENGINEERING

*Professors:* BECKMANN, BONNEY, DUFFEY, AND SCHROEDER.

*Associate Professors:* GOMEZPLATA, MARCHELLO, AND SILVERMAN.

*Assistant Professors:* GLOMB AND SMITH.

*Visiting Assistant Professor:* SHERWOOD.

*Instructors:* COPELAND AND SYKES.

### CH. E. 15. CHEMICAL ENGINEERING ANALYSIS. (2)

First semester. Prerequisite, Chem. 3 or equivalent. Introduction to methods of chemical engineering analysis. Stoichiometric relations, correlation of chemical and physical properties, application of material and energy balances to chemical engineering operations and processes.

### CH. E. 50. ENGINEERING THERMODYNAMICS. (3)

Second semester. Prerequisite, Ch. E. 15. Fundamental principles of thermodynamics and their application to engineering problems. First and second laws of thermodynamics, properties of gases, liquids and solids, phase equilibrium, flow and non-flow systems, production of work from heat.

### *For Advanced Undergraduates and Graduates*

### CH. E. 109. CHEMICAL PROCESS THERMODYNAMICS. (3)

First semester. Prerequisite, Ch. E. 50. Estimation of thermodynamic properties of pure substances and mixtures. Chemical and phase equilibria in ideal and non-ideal systems. Thermodynamic analysis of processes, equilibrium stage operations, thermodynamics of chemically reacting systems.

### CH. E. 116. APPLIED MATHEMATICS IN CHEMICAL ENGINEERING. (3)

Second semester. Prerequisites, Math. 21 and Ch. E. 127. Mathematical technique applied to the analysis and solution of chemical engineering problems. Use of differentiation, integration, differential equations, partial differential equations and integral transforms. Application of infinite series, numerical and statistical methods.

### CH. E. 127, 129, 131. TRANSFER AND TRANSPORT PROCESSES I, II, III. (4, 3, 3)

First, second, and first semesters, respectively. Prerequisite, Ch. E. 50. A three



## CHEMICAL ENGINEERING

semester sequence of courses covering the theory and applications of molecular and turbulent transport phenomena. Principles of fluid mechanics, mass transfer and heat transfer. Dimensional analysis, analogy between heat, mass and momentum transfer, Newtonian and non-Newtonian flow, convective heat and mass transfer. Steady and unsteady state diffusion and conduction, simultaneous heat and mass transfer, interphase transfer, boundary layer theory. The equilibrium stage concept and its application to absorption, extraction, and distillation. Analysis of multiple stage processes. Principles of radiant heat transfer, evaporation, filtration, crystallation, drying, condensation, boiling, humidification, ion exchange, and phase separations.

### CH. E. 133, 134. CHEMICAL ENGINEERING SEMINAR. (1, 1)

Prerequisite, Senior standing. Oral and written reports on recent developments in chemical engineering and the process industries. Fall and Spring Semesters.

### CH. E. 137. CHEMICAL ENGINEERING LABORATORY. (3)

First or second semester. Prerequisite, Ch. E. 129. Laboratory fee, \$10.00. Application of chemical engineering process and unit operation principles in small scale semi-commercial equipment. Data from experimental observations are used to evaluate performance and efficiency of operations. Emphasis is placed on correct presentation of results in report form.

### CH. E. 140. INTRODUCTION TO NUCLEAR TECHNOLOGY. (2)

First and second semesters. Two lectures a week. Prerequisites, Math 21 and Phys. 21. Engineering problems of the nuclear energy complex, including basic theory, nuclear reactor design, and isotopic and chemical separations. Emphasis is on the nuclear fission reactor. (Duffey.)

### CH. E. 142. ENVIRONMENTAL CONSIDERATION OF NUCLEAR ENGINEERING. (3)

First semester. Three lectures a week. Prerequisite, permission of instructor. Protection of the public and the environment from the hazards of nuclear energy operations. Handling and disposal of gaseous, liquid and solid radioactive wastes. Meteorological, hydrological and geological phases. Typical problems from mining of ores through nuclear reactor operations and chemical separations. Legislative and economic factors, site selection, plant design and operation as related to the environment. (Silverman.)

### CH. E. 145. CHEMICAL ENGINEERING KINETICS. (2)

First semester. Prerequisite, Chem. 187. Fundamentals of chemical reaction kinetics and their application to the design and operation of chemical reactors. Reaction rate theory, homogeneous reactions in batch and flow systems, adsorption, heterogeneous reactions and catalysis, electrochemical reactions. Catalytic reactor design.

### CH. E. 147. PROCESS ENGINEERING AND DESIGN. (3)

Second or first semester. Prerequisite, Ch. E. 129. Utilization of chemical engineering principles for the design of process equipment. Typical problems in the design of chemical plants. Comprehensive reports are required.

### CH. E. 148. NUCLEAR TECHNOLOGY LABORATORY. (2 to 4)

One or two lectures, and one or two laboratory periods a week. Prerequisites, Chem. 3, Phys. 21, Math. 21, Ch. E. 140, or equivalents, and permission of instructor. Laboratory fee, \$8.00 per semester. Techniques of detecting and

## CHEMICAL ENGINEERING

making measurements of nuclear or high energy radiation. Radiation safety experiments. Both a sub-critical reactor and the 10-KW swimming pool critical reactor are sources of radiation. (Silverman.)

### CH. E. 149. CHEMICAL ENGINEERING ECONOMICS. (2)

Second semester. Prerequisite, Ch. E. 129. Principles of engineering economy applied to chemical processes. Optimizing methods in the design and operation of industrial processes. Determination of investment and operating costs for chemical plants.

### CH. E. 150. CHEMICAL PROCESS DEVELOPMENT. (3)

First semester. Prerequisite, Ch. E. 129. Chemical process industries from the standpoint of technology, raw materials, products and processing equipment. Operations of the major chemical processes and industries combined with quantitative analysis of process requirements and yields.

### CH. E. 152. ADVANCED CHEMICAL ENGINEERING ANALYSIS. (2)

Second semester. Prerequisite, Ch. E. 116. Application of digital and analog computers to chemical engineering problems. Numerical methods, programming, differential equations, curve fitting, amplifiers and analog circuits.

### CH. E. 154. NUMERICAL AND STATISTICAL ANALYSIS. (2)

First semester. Prerequisite, Ch. E. 116. Use of probability and statistics in chemical engineering. Probability, normal distribution and measure of variability. The chi square, and the t-test. Correlation and regression analysis. Introduction to analysis of variance and sequential analysis.

### CH. E. 155. CHEMICAL PROCESS LABORATORY. (2)

First semester. Prerequisite, Ch. E. 129, and 145 concurrently. Laboratory fee, \$10.00. Experimental study of various chemical processes through laboratory and small semi-commercial scale equipment. Reaction kinetics, fluid mechanics, heat and mass transfer.

### CH. E. 157. CHEMICAL ENGINEERING SYSTEMS ANALYSIS AND DYNAMICS. (3)

Second semester. Prerequisite, Ch. E. 116. Dynamic response applied to process systems. Goals and modes of control; LaPlace transformations; representation, analysis and synthesis of simple control systems; closed loop response; dynamic testing; role of modern computing machinery in process control.

### CH. E. 159. DYNAMICS AND CONTROL LABORATORY. (2)

Second semester. Prerequisite, Ch. E. 116, 157 concurrently. Laboratory fee, \$10.00. Methods of process control. Dynamics and response of process systems, modes of control, synthesis of simple control schemes. Use of experimental and mathematical models of control systems.

### CH. E. 160. APPLIED SOLID STATE THERMODYNAMICS. (3)

First semester. Prerequisite, Ch. E. 109 or equivalent. Physical structure, phase and chemical equilibria, physical properties and behavior of solids with emphasis on polymeric, metallic, and ceramic materials. Crystal structure. lattice vibrations, specific heats, free electron and bond theories. Irreversible thermodynamic considerations and application to industrial systems.

**CH. E. 162. SOLID STATE TRANSPORT PHENOMENA AND REACTION KINETICS. (3)**

Second semester. Prerequisites, Ch. E. 127 and 145 or equivalent. Transport and reaction kinetic phenomena in the solid state. Mass transfer operations, heat and stress effects, nucleation and phase growth. Condensation, free radical and ionic polymerization. Deformation, diffusion, conduction, and reaction kinetics in polymer, metallic, and ceramic systems.

**CH. E. 165. RESEARCH. (2 or 3)**

First and second semesters. Prerequisite, Permission of the staff. Laboratory fee, \$10.00. Investigation of a research project under the direction of one of the staff members. Comprehensive reports are required.

*For Graduates*

**CH. E. 201. GRADUATE SEMINAR. (1)**

First and second semesters. Discussion of current advances and research in chemical engineering. Presented by graduate students and staff.

**CH. E. 203. CHEMICAL ENGINEERING THERMODYNAMICS. (3)**

First semester. Advanced application of the general thermodynamic methods to chemical engineering problems. First and second law consequences; estimation and correlation of thermodynamic properties; phase and chemical reaction equilibria.

**CH. E. 205. TRANSPORT PHENOMENA. (3)**

First semester. Heat, mass and momentum transfer theory from the viewpoint of the basic transport equations. Steady and unsteady state; laminar and turbulent flow; boundary layer theory, mechanics of turbulent transport; with specific application to complex chemical engineering situations.

**CH. E. 207. TRANSFER OPERATIONS. (3)**

Second semester. Prerequisite, Ch. E. 205. Applications of heat, mass and momentum transfer theory to chemical engineering problems. Transfer coefficients; heat, mass and momentum analogies; two-phase flow; boiling and condensation; radiation heat transfer.

**CH. E. 209. COMPLEX EQUILIBRIUM STAGE PROCESSES. (3)**

Second semester. The theory and application of complex equilibrium stages. Binary and multicomponent distillation; multicomponent absorption; extraction; liquefaction.

**CH. E. 211. ADVANCED CHEMICAL REACTION KINETICS. (3)**

Second semester. The theory and application of chemical reaction kinetics to reactor design. Reaction rate theory; homogeneous batch and flow reactors; fundamentals of catalysis; design of heterogeneous flow reactors.

**CH. E. 223. PROCESS ENGINEERING AND DESIGN. (3)**

First and second semesters. Coordination of chemical engineering and economics to advanced process engineering and design. Optimization of investment and operating costs. Solution of typical problems in the design of chemical engineering plants.

**CH. E. 235. CHEMICAL PROCESS DYNAMICS. (3)**

First semester. Prerequisites, Differential equations or consent of instructor.

## CHEMICAL ENGINEERING

Analysis of open and closed control loops and their elements; dynamic response of processes; choice of variables and linkages; dynamic testing and synthesis; noise and drift; chemical process systems analysis; strategies for optimum operation.

### CH. E. 247. SPECIAL PROBLEMS IN CHEMICAL ENGINEERING.

First and second semesters. Special study and/or investigation in chemical engineering under the direction of an assigned faculty advisor. Since content changes, re-registration is permissible.

### CH. E. 253. ADVANCED TOPICS IN THERMODYNAMICS. (3)

Second semester. *Offered in alternate years.* Prerequisite, Ch. E. 203.

### CH. E. 255. ADVANCED TOPICS IN CHEMICAL REACTION SYSTEMS. (3)

First semester. *Offered in alternate years.* Prerequisite, Ch. E. 211.

### CH. E. 257. ADVANCED TOPICS IN TRANSFER THEORY. (3)

First semester. *Offered in alternate years.* Offered 1963-64. Prerequisite, Ch. E. 207.

### CH. E. 259. ADVANCED TOPICS IN SEPARATION PROCESSES. (3)

Second semester. *Offered in alternate years.* Offered 1963-64.

### CH. E. 301. SEMINAR IN NUCLEAR ENGINEERING. (1)

First and second semesters, one meeting a week. Survey of nuclear engineering literature, and oral presentation of prepared reports. Since the content of this course is changing, a student may receive a number of credits by re-registration (Duffey, Silverman.)

### CH. E. 302, 303. NUCLEAR REACTOR ENGINEERING. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, permission of instructor. Design, construction and operation of typical nuclear reactors, including general design, nuclear reactor theory, materials of construction, heat transfer, and control. (Duffey.)

### CH. E. 305. SUB-CRITICAL NUCLEAR REACTOR LABORATORY. (3)

One lecture, two laboratory periods a week. Prerequisites, Ch. E. 148, 302, 303 or equivalents and permission of instructor. Laboratory fee, \$8.00 per semester. Experiments, such as multiplication factors, neutron flux distribution and neutron activation are carried out. (Duffey.)

### CH. E. 308, 309. NUCLEAR REACTOR LABORATORY. (4, 4)

Two lectures and two laboratory periods a week. Prerequisites, permission of instructor, Ch. E. 148, 302, 303, 305, or equivalent. Laboratory fee \$10.00 per semester. The University of Maryland 10-KW swimming pool reactor is employed in experiments on reactor startup and operation, shielding, control, neutron flux distributions, neutron and gamma spectrum, cross section measurements. (Duffey.)

### CH. E. 311, 312. NUCLEAR SEPARATION ENGINEERING. (2, 2)

First and second semesters. Two lectures a week. Prerequisite, permission of instructor. Separations include processing of uranium, thorium, and other ores; chemical separation of plutonium, uranium, fission products and other elements from materials irradiated in nuclear reactors; treatment of radioactive wastes; isotopic separation of U235; and isotopic separation of heavy water and other



desired materials. Ch. E. 311 concerns primarily chemical separations, while Ch. E. 312 concerns mostly isotopic separations and fuel cycles. Ch. E. 311 is not necessarily a prerequisite for Ch. E. 312. (Silverman.)

### CH. E. 313. SELECTED TOPICS IN NUCLEAR ENGINEERING. (2)

Two lectures a week. Prerequisite, permission of instructor. Topics of current interest and recent advances in the nuclear engineering field. Because of the rapid advances in the field, information on special topics of much practical importance is continually becoming available. Since the content changes, re-registration may be permitted. (Duffey, Silverman.)

### CH. E. 314. SPECIAL PROBLEMS IN NUCLEAR ENGINEERING.

Credit hours to be arranged. Prerequisite, consent of instructor. Laboratory fee, \$10.00 per semester. (Staff.)

### CH. E. 315, 316. NON-POWER USES OF NUCLEAR OR HIGH ENERGY RADIATION. (2, 2)

Second semester. Two lectures a week. Prerequisite, permission of instructor. An engineering survey of such radiation applications as synthesizing chemicals, preserving foods, control of industrial processes. Design of irradiation installations, e.g., cobalt 60 gamma ray sources, electronuclear machine arrangements, and chemonuclear reactors. (Silverman.)

### CH. E. 317. RADIATION EFFECTS LABORATORY. (2 to 4)

Prerequisite, permission of department head. Effect of massive doses of radiation on the properties of matter for purposes other than those pointed toward nuclear power. Radiation processing, radiation-induced chemical reactions, and conversion of radiation energy; isotope power sources.

### CH. E. 320, 321. ADVANCED NUCLEAR REACTOR THEORY. (2, 2)

First and second semesters. Two lectures a week. Prerequisites, Ch. E. 302, 303, year of advanced calculus, and permission of instructor. Calculation of critical masses, neutron flux distribution, neutron energy spectrum, kinetics of reactor behavior and gamma ray attenuation. Multigroup treatment of reflected reactors, solution of the transport equations, perturbation theory, and other advanced calculation techniques. (Duffey.)

### CH. E. 399. RESEARCH IN CHEMICAL ENGINEERING. RESEARCH IN NUCLEAR ENGINEERING.

Credit hours to be arranged. Laboratory fee, \$8.00 per semester (Research in Chemical Engineering). Laboratory fee, \$10.00 per semester (Research in Nuclear Engineering). The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. (Staff.)

## CIVIL ENGINEERING

## CIVIL ENGINEERING

*Professors:* LOONEY, LEPPER AND OTTS.

*Associate Professors:* BARBER, COURNYN, GOHR, PIPER AND WEDDING.

*Instructors:* ANTRIM, GARBER, REILLY AND VINER.

*Lecturers:* BLOEM, ROBERTS AND WALKER.

### *For Advanced Undergraduates and Graduates*

#### C.E. 101. CIVIL ENGINEERING PLANNING. (3)

First and second semesters. One lecture and two laboratories each week. For seniors in civil engineering. Modern planning and layout of engineering projects, such as industrial plants, transportation facilities, municipal improvements, housing and urban developments. Construction, specifications, contracts, and costs. (Piper.)

#### C.E. 102. FLUID MECHANICS. (3)

First and second semesters. Three lectures each week. Prerequisites, Math. 21, Phys. 21 or concurrent registration. A rational study of fluids at rest and in motion. Principles of viscous and turbulent flow in pipes, nozzles, etc. Impulse and momentum concepts. Pumps, turbines and meters. Dimensional analysis and laws of similarity. (Cournyn, Reilly.)

#### C.E. 110. SURVEYING I. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, junior standing. Principles and methods of making plane and topographic surveys. Use, care and adjustment of instruments. Consistent accuracy and systematic procedures in field work, computation, and mapping are emphasized for obtaining desired objectives. (Gohr.)

#### C.E. 111. SURVEYING II. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 110. A continuation of C.E. 110 with emphasis on elementary problems of obtaining essential field data preliminary to design and locating points, lines and grades for selected engineering construction. (Gohr.)

#### C.E. 121, 122. ADVANCED STRENGTH OF MATERIALS. (3, 3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, E.S. 20, C.E. 151 and senior standing. Strength and deformation of deformable bodies. Unsymmetrical bending, buckling, combined stresses and torsion. Application of experimental data on materials to design problems. Correlation of analytical and experimental methods of analysis with design. Electrical strain gages, photoelasticity, brittle lacquer methods and various analogies. (Lepper, Wedding.)

#### C.E. 140. ENGINEERING ANALYSIS AND COMPUTER PROGRAMMING. (3)

Second semester. Two lectures each week. (75 min.) Prerequisite, Math. 64 or concurrent registration. Elements of operational calculus, vector analysis; numerical methods and programming for computers. Errors, interpolation, series, integration, iteration and solution of equations. (Looney, Garber.)

**C.E. 142. ADVANCED FLUID MECHANICS. (3)**

First semester. Three lectures a week. Prerequisites, E.S. 21, C.E. 102, and Math. 64. Advanced topics in fluid mechanics and related fields of hydrology, hydraulic similitude, ground water and seepage. Special research projects.  
(Cournyn.)

**C.E. 150. SOIL MECHANICS. (4)**

First semester. Three lectures and one laboratory period each week. Prerequisites, E.S. 21 and C.E. 151. Introductory study of the mechanics of aggregations and its application to earthwork and foundations. Engineering geology relative to civil engineering and soil mechanics.  
(Barber.)

**C.E. 151. MATERIALS OF ENGINEERING. (3)**

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Math. 21, concurrent registration in E.S. 20 and Phys. 21. Properties and constitution of the principal materials used in civil engineering; laboratory tests for these properties, interpretation of test results and of specifications.  
(Wedding.)

**C.E. 152. ADVANCED MATERIALS OF ENGINEERING. (3)**

Second semester. Three lectures a week. Prerequisites, C.E. 151, Math. 21, Phys. 21, E.S. 20. Mechanisms of the behavior of materials under repeated, sustained and impact loads in relation to their environment. Influence of micro-structure on mechanical properties. Fracture theory. Rheological aspects of the characteristics of selected materials.  
(Wedding.)

**C.E. 160. STRUCTURAL DESIGN. (4)**

Second semester. Three lectures and one laboratory period each week. Prerequisites, E.S. 20 and C.E. 151; concurrent registration in C.E. 151 permitted. Analysis and design of buildings, bridges and other civil engineering structures in timber, concrete and steel. Layout of projects and arrangement and proportioning of members. Specifications and codes, construction methods as related to design.  
(Piper.)

**C.E. 161. STRUCTURAL DESIGN. (4)**

First semester. Three lectures and one laboratory period each week. Prerequisite, C.E. 160. Continuation of C.E. 160. Elementary indeterminate structures and advanced design problems.  
(Piper.)

**C.E. 162. STRUCTURAL ANALYSIS. (3)**

First semester. Two lectures per week. (75 min.) Prerequisite, C.E. 160. Concurrent registration in C.E. 161. Analytical and graphical determination of dead-and-live-load induced stresses in indeterminate structures. Influence lines, Muller-Breslau's principle deflections, moment areas, virtual work and moment distribution.  
(Lepper, Garber.)

**C.E. 163. STRUCTURAL ANALYSIS. (3)**

Second semester. Two lectures per week. (75 min.) Prerequisite, C.E. 162. Continuation of C.E. 162. Advanced analysis and design of indeterminate structures, the use of digital computers; structural dynamics, earthquakes and vibrations.  
(Lepper, Garber.)

**C.E. 170. WATER SUPPLY. (3)**

First semester. Three lectures each week and required laboratory. Prerequisite, C.E. 102. Requirements of a municipal water supply—design, operation, maintenance, and administration.  
(Otts.)

## CIVIL ENGINEERING

### C.E. 171. SEWERAGE. (4)

Second semester. Three lectures each week and required laboratory. Prerequisite, C.E. 102. The collection, treatment and disposal of sewage. (Otts.)

### C.E. 180. TRANSPORTATION. (3)

Second semester. Prerequisite, E.S. 20, C.E. 151, and C.E. 110. Engineering problems of transportation by airways, highways, pipe-lines, railways and waterways. Elementary dynamics of traffic and functional consideration of routes and terminals. (Antrim.)

### C.E. 181. HIGHWAYS. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 150. Location, design, construction, and maintenance of roads and pavements. Laboratory problems and field inspection trips. (Barber.)

### C.E. 182. TRANSPORTATION PLANNING. (3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, C.E. 180. Transportation planning with emphasis on urban planning. Rail, air, water, and road facilities are considered with respect to layout and economics. (Antrim.)

### C.E. 199. RESEARCH. (3)

First and second semesters. Prerequisite, senior standing. A course arranged to meet the needs of exceptionally well prepared students for study in a particular field. (Staff.)

## *For Graduates*

### C.E. 221, 222. ADVANCED STRENGTH OF MATERIALS. (3, 3)

First and second semesters. Prerequisites, E.S. 20, 21, and C.E. 151 or equivalent. Analyses for stress and deformation in engineering members by the methods of mechanics of materials and elementary theories of elasticity and plasticity. Problems in flexure, torsion, plates and shells, stress concentrations, indeterminate combinations, residual stresses, stability. (Lepper.)

### C.E. 223. EXPERIMENTAL STRESS ANALYSIS. (3)

Second semester. Prerequisite, C.E. 221 or permission of instructor. Experimental methods of stress and strain analysis for static and impact forces. Structural models, brittle and plastic material methods; analogies; photoelasticity; optical, mechanical and electrical strain gages and instrumentation. (Wedding.)

### C.E. 224. ADVANCED ENGINEERING MATERIALS LABORATORY. (3)

First or second semester. Prerequisite, E.S. 20, 21 and C.E. 151 or equivalent. Critical examination of the methods for testing engineering materials and structures under static, repeated, sustained and impact forces. Laboratory experiments for the determination of strength and stiffness of structural alloys, concrete and other construction materials. Examination of the effects of test factors on the determination of engineering properties. (Lepper, Wedding.)

### C.E. 225, 226. ADVANCED PROPERTIES OF MATERIALS. (3, 3)

First and second semesters. Prerequisites, C.E. 221 and 222. Modern theories of the structure of matter applied to the study of elastic and plastic deformation of materials under static, repeated, sustained and impact forces. Elements of solid state physics, crystal structure, slip and dislocation theory; polycrystalline



## CIVIL ENGINEERING

solids. Effects of low and high temperature, loading rates, and state of stress on mechanical properties and fracture. Critical study of tests and their application to strength of members. (Lepper.)

### C.E. 227, 228. THEORIES OF CONCRETE AND GRANULAR MATERIALS. (3, 3)

First and second semester. Prerequisites, C.E. 221, 222 and 224. Critical reviews of analytical and experimental investigations of the behavior of concretes under diverse conditions of loading and environment. Mechanics of granular aggregates and the chemistry of cements. Theories of the design of portland cement and asphaltic concrete mixtures. Relations between laboratory testing and field experience. (Wedding.)

### C.E. 241. HYDRAULIC ENGINEERING. (3)

Prerequisite, C.E. 102 or equivalent. Water power and flood control. Analysis of the principal features of a water power project with special reference to reservoir, waterway, dam, plant accessories, and power house equipment. Complete report on a water power project required, including costs and power valuation. (Cournyn.)

### C.E. 251. SOIL MECHANICS. (3)

Prerequisites, C.E. 150, 162 and 163, or equivalent. Identification properties tests and classification methods for earth materials. Strength and deformation characteristics, hydraulic properties and permeability, shearing resistance, compressibility and consolidation, with laboratory tests for these properties. Study of the basic theories involved and the development of test procedures. (Barber.)

### C.E. 252. ADVANCED FOUNDATIONS. (3)

Prerequisites, C.E. 150, 162 and 163, or equivalent. Principles of mechanics applied to engineering problems in foundations. Earth pressure theories, seepage and drainage phenomena, stability of footings and slopes, stresses and deformation in soils, consolidation theory and application to foundation settlements. (Barber.)

### C.E. 261. CIVIL ENGINEERING PLANNING. (3)

First semester. Prerequisites, C.E. 160, 161, 162 and 163, or equivalent. General planning of large engineering projects such as industrial plants, bridges, highways, railroads, and port developments. Emphasis on general planning followed by design construction and cost estimates. (Piper.)

### C.E. 262. CIVIL ENGINEERING PLANNING. (3)

Second semester. Prerequisite, C.E. 261. City and regional planning and development. Special problems of municipal development. Emphasis on preparing engineering reports, financing and cost estimates. Preparation of presentation to public bodies. (Piper.)

### C.E. 263. THEORY OF STRUCTURAL DESIGN. (3)

First semester. Prerequisite, C.E. 160, 161, 162 and 163, or equivalent. Advanced structural theory applied to the design of bridges and buildings. Methods of analysis for indeterminate structures, including moment distribution, Maxwell's method, virtual work, reciprocal theory, Muller Breslau's principle, and classical analytical methods. (Looney.)

## ELECTRICAL ENGINEERING

### C.E. 264. THEORY OF STRUCTURAL DESIGN. (3)

Second semester. Prerequisite, C.E. 263. Correlation of theory, experience, and experiments in study of structural behavior, proportioning, and preliminary design. Special design problems of fatigue, buckling, vibrations, and impact.

(Looney.)

### C.E. 265, 266. CONCRETE STRUCTURES. (3, 3)

First and second semesters. Prerequisites, C.E. 263 and 264. Examination of the fundamental basis for the design of reinforced concrete structures. Correlation of laboratory research, advanced structural theory and mechanics and

design methods. Application to the design of modern forms of concrete structures, such as folded plates, slabs, thin shells, lift slabs, prestressing, and precasting.

(Looney.)

### C.E. 267, 268. STEEL STRUCTURES. (3, 3)

First and second semesters. Prerequisites, C.E. 263 and 264. Design of large steel structures, such as cantilever and continuous trusses and girders, steel arches, suspension bridges, and tall building frames. Special problems of secondary stresses, wind bracing, stability and bracing, and interaction and deformation stresses. Study of specifications, factor of safety and ultimate strength, in the relation between structural tests and design.

(Looney.)

### C.E. 271, 272. SANITARY ENGINEERING DESIGN. (3, 3)

First and second semesters. Prerequisites, C.E. 170 and 171, or equivalent. Design of sewer systems and appurtenances; sewage treatment plants; water collection and distribution systems; water purification plants. Structures related to the operation of water supply and sewerage systems and industrial waste treatment plants.

(Otts.)

### C.E. 281, 282. ADVANCED HIGHWAY ENGINEERING. (3, 3)

First and second semesters. Prerequisites, C.E. 150, 180 and 181, or equivalent. Reconnaissance and location, surveys and plans, drainage, subgrade structure, low-cost roads, base courses, flexible and rigid pavement design. Highway organization, planning, economy, and finance. Geometric design and traffic engineering.

(Barber.)

### C.E. 296, 297. ENGINEERING ANALYSIS AND COMPUTER PROGRAMMING. (3, 3)

First and second semesters. Three lectures each week. Prerequisite, consent of Head of Department. Applications to elasticity, stability and buckling, vibrations, thin plates and shells, or other problems in the area of mechanics, structures and materials.

(Roberts.)

### C.E. 298. SEMINAR.

First or second semester. Credit in accordance with work outlined by the Department. Prerequisite, consent of the Department of Civil Engineering.

(Staff.)

### C.E. 399. RESEARCH.

Credit in accordance with work done.

(Staff.)

## ELECTRICAL ENGINEERING

*Professors:* TOMPKINS, REED AND WAGNER.

*Associate Professors:* PRICE, RUTELLI, SIMONS AND HOCHULI.

*Assistant Professors:* MARCOVITZ AND PUGSLEY.

*Instructors:* FRIEDMAN, GINNINGS, GLOCK, HAHN, JONES, LARSON, AND RUMBAUGH.

*Lecturers:* CHU, SCHULMAN, HOGAN AND VANDERSLICE.

## E. E. 1. BASIC ELECTRICAL ENGINEERING. (4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, Math. 21 and Phys. 21 or concurrent registration. Laboratory fee, \$5.00. Required of sophomores in electrical engineering. Basic concepts of electric potential, current, power and energy; circuit analysis by the mesh-current and nodal methods; network theorems. (Rumbaugh, Friedman.)

## E. E. 50. FUNDAMENTALS OF ELECTRICAL ENGINEERING. (3)

First semester. Three lectures a week. Prerequisites, Math. 21 and Phys. 21. Required of juniors in civil engineering. Fundamental d-c and a-c circuit analysis; survey of electronic techniques for control and instrumentation. (Glock, Larson.)

## E. E. 51, 52. PRINCIPLES OF ELECTRICAL ENGINEERING. (4, 4)

First semester. Three lectures a week. Prerequisites, Math. 21 and Phys. 21. Prerequisites, Math. 21 and Phys. 21. Laboratory fee, \$5.00. Required of juniors in aeronautical and mechanical engineering, and seniors in chemical engineering. The first semester covers selected topics from the material taught in E. E. 1 and E. E. 100. The second semester (prerequisite E. E. 51) covers theory and applications of electron tubes similar to the material in E. E. 101. These two courses may be used by aeronautical, mechanical, and chemical engineering students as prerequisites equivalent to E. E. 100, 101 for taking more advanced E. E. courses for credit in their departments only. They cannot be substituted directly for E. E. 100, 101 for a degree in electrical engineering. (Rumbaugh, Friedman, Hahn.)

*For Advanced Undergraduates and Graduatès*

## E. E. 100. ALTERNATING-CURRENT CIRCUITS. (4)

First semester. Three lectures and one laboratory period a week. Prerequisites, "C" average (by courses) in Math. 20-21, Phys. 20-21, and E. E. 1. Laboratory fee, \$5.00. Required of juniors in electrical engineering. Single- and poly-phase-circuit analysis under sinusoidal and non-sinusoidal conditions of operations. Theory and design of tuned coupled circuits. Significance and use of the s-plane. (Thompkins, Hahn, Glock, Rumbaugh, Ginnings.)

## E. E. 101. ENGINEERING ELECTRONICS. (4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisite, E. E. 100. Required of juniors in electrical engineering. Laboratory fee, \$5.00. Physical principles, circuit theory and applications of electron tubes

## ELECTRICAL ENGINEERING

and transistors; associated circuits with emphasis on equivalent-circuit and graphical analysis of linear amplifiers; theory of feedback amplifiers.

(Ginnings, Rumbaugh.)

### E. E. 103. RANDOM VARIABLE. (2)

Second semester. Two lectures a week. Prerequisite, E. E. 100 and concurrent registration in E. E. 101. Electrical noise involving Gaussian distribution; shot noise; elements of probability and statistics; noise figure; reliability.

(Jones, Hahn.)

### E. E. 104. LONG-LINE THEORY. (3)

Second semester. Three lectures a week. Prerequisite, E. E. 100 and E. E. 107. Required of juniors in electrical engineering. Long-line theory applied to audio-frequency and ultra-high-frequency systems; theory of stubbing; elements of filter theory; impedance matching; Maxwell's equations in rectangular and cylindrical coordinates and in scalar notation.

(Reed, Simons.)

### E. E. 106. PROGRAMMING DIGITAL COMPUTERS. (2)

First or second semester. Required of juniors in electrical engineering. Prerequisites, Math 21, Phys. 21, E. E. 1, and concurrent registration in Math. 64. Laboratory fee, \$5.00. Number systems; theory of digital computers; essential steps in programming; numerical solutions.

(Tompkins, Marcovitz, Glock, Larson.)

### E. E. 107. ELECTRICITY AND MAGNETISM. (3)

First semester. Three lectures a week. Prerequisites, Math. 21, Phys. 21 and E. E. 1. Required of juniors in electrical engineering. Electromagnetism as applied to electrical engineering; electric field theory with emphasis on Laplace's and Poisson's equations and capacitance calculations; magnetic field theory with emphasis on the line integral law of magnetic field intensity and inductance calculations; Maxwell's equations using vector notation.

(Hochuli, Hahn, Friedman.)

### E. E. 108. NATURAL CIRCUIT BEHAVIOR. (3)

Second semester. Three lectures a week. Prerequisites, E. E. 100, Math. 64, concurrent registration in E. E. 101. Required of juniors in electrical engineering. Current, voltage, and power transients in lumped-parameter networks; introduction and utilization of Laplace transforms.

(Price, Simons.)

### E. E. 109. PULSE TECHNIQUES. (3)

Second semester. Three lectures a week. Prerequisites, E. E. 108, Math. 64. Required of seniors in electrical engineering. Generation, shaping, amplification, and delay of non-sinusoidal wave-forms, using transistors, electron tubes, and magnetic cores. Circuit design techniques and application to radar, television, and computers.

(Marcovitz, Simons, Schulman.)

### E. E. 110. TRANSISTOR CIRCUITRY. (3)

First or second semester. Three lectures a week. Prerequisite, E. E. 101. P-n junction theory; junction transistors; transistor parameters; equivalent circuits; typical transistor amplifier and oscillator circuits.

(Simons.)

### E. E. 111, 112. RADIO ENGINEERING. (4, 4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, E.E. 101, E.E. 108. Laboratory fee, \$5.00. Required of seniors in electrical engineering. Characteristics of radio-frequency circuits including the



## ELECTRICAL ENGINEERING

design of tuned coupled circuits and Class C amplifiers. Amplification, oscillation, modulation, and detection with particular emphasis on radio-frequency amplification and broadcast-range reception. (Wagner, Price, Rutelli, Simons.)

### E. E. 113. NETWORK SYNTHESIS. (3)

First semester. Three lectures a week. Prerequisite, E. E. 108. Reactive networks; Two-terminal pair networks; filters; amplifier networks; block diagrams. (Price, Simons, Schulman.)

### E. E. 114. APPLIED ELECTRONICS. (3)

First or second semester. Three lectures a week. Prerequisite, E. E. 101. Detectors and discriminators; gas tube characteristics and associated circuits; photoelectric tubes and associated circuits; rectifiers and regulators; vacuum tube instruments. (Staff.)

### E. E. 115. FEEDBACK CONTROL SYSTEMS. (3)

Second semester. Three lectures a week. Prerequisites, E. E. 101 and E. E. 108. Servomechanisms and automatic regulators; investigations of electric, hydraulic, pneumatic, and mechanical elements; analysis of system differential equations and development of transfer functions; stability criteria. (Price.)

### E. E. 116. FEEDBACK CONTROL SYSTEMS LABORATORY. (1)

Second semester. One laboratory period a week. Prerequisite, E. E. 115 or concurrent registration in E. E. 115. Laboratory fee, \$5.00. Laboratory exercises involving some of the basic concepts of feedback control systems. (Price.)

### E. E. 118. ELECTRICAL ENERGY CONVERSION. (4)

First semester. Three lectures and one laboratory period a week. Prerequisite, E. E. 100. Required of seniors in electrical engineering. Laboratory fee, \$5.00. The operating principles of alternating-current machinery considered from theoretical, design, and laboratory points of view. Synchronous generators and motors; single and poly phase transformers; three-phase induction generators and motors; single-phase induction motors; emphasis on energy conversion. (Reed, Jones, Glock.)

### E. E. 120. ELECTROMAGNETIC WAVES. (3)

Second semester. Three lectures a week. Prerequisites, E. E. 107, Math. 64. Senior standing in electrical engineering or physics. The basic mathematical theory of electromagnetic wave propagation employing Maxwell's equations in scalar and vector form and in generalized coordinates; application to wave-guide transmission; propagation in space. (Reed.)

### E. E. 130. ELECTRONIC ANALOG COMPUTERS. (3)

First semester. Three lectures a week. Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the analog type. Analog computing components, operational amplifiers, d-c amplifiers, instrument servos, multipliers, and function generators. (Chu.)

### E. E. 131. ELECTRONIC DIGITAL COMPUTERS. (3)

Second semester. Three lectures a week. Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the digital type. Digital computing operations, basic computing and control circuits, logical design, arithmetic unit, memory systems, and control units. (Chu.)

## ELECTRICAL ENGINEERING

### E. E. 160, 161. VACUUM TUBES. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, Math. 64, senior standing in electrical engineering or physics. Electron emission; laws of electron motion; space charge effects; noise in vacuum tubes, magnetic lenses; klystrons; magnetrons; photoelectric tubes; other special-purpose tubes.

(Hochuli.)

### *For Graduates*

### E. E. 201. ELECTROMAGNETIC THEORY. (3)

Second semester. Three lectures a week. Prerequisite, E. E. 120 or E. E. 215. Theoretical analysis and engineering applications of Laplace's, Poisson's and Maxwell's equations.

(Hochuli.)

### E. E. 202, 203. TRANSIENTS IN LINEAR SYSTEMS. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical or mechanical engineering or physics. Operational circuit analysis; the Fourier integral, transient analysis of electrical and mechanical systems and vacuum tube circuits by the Laplace transform method. (Wagner.)

### E. E. 206, 207. MICROWAVE ENGINEERING. (3, 3)

First and second semesters. Three lectures a week first semester and two lectures and one laboratory period a week second semester. Prerequisite, E. E. 201 or E. E. 216. Laboratory fee, E. E. 207, second semester, \$5.00. Basic considerations in solving field problems by differential equations; circuit concepts and their validity at high frequency; propagation and reflection of electromagnetic waves; guided electromagnetic waves; high-frequency oscillators and tubes, radiation engineering.

(Hochuli.)

### E. E. 212. SERVOMECHANISMS. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical or mechanical engineering or physics. (It is desirable that the student should have had E. E. 202.) The design and analysis of regulatory systems, emphasizing servo-mechanisms. Regulatory systems are analyzed by means of the governing differential equations to provide background for more practical studies of frequency spectrum analysis. Characteristics of actual systems and practical considerations are studied.

(Price.)

### E. E. 215, 216. RADIO WAVE PROPAGATION. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical engineering, physics, or mathematics. Maxwell's wave equation; concept of retarded magnetic vector potential; propagation over plane earth; propagation over spherical earth; refraction; meteorological effects; complex antennas; air-to-air propagation; lobe modulation.

(Reed.)

### E. E. 218, 219. SIGNAL ANALYSIS AND NOISE. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical engineering or physics. Fourier series and integrals; phase and frequency modulation; noise figures of linear systems; shot effect; power spectra; applications of correlation function; properties of noise.

(Hogan.)

### E. E. 220, 221. THEORY OF COMMUNICATION. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, E. E. 219. Measure of information and channel capacity; methods of describing random signals and circuit analysis involving those signals. The statistical theory of communication systems. Systems which are statistically optimum.

(Hogan.)

## ENGINEERING SCIENCES

### E. E. 222. GRADUATE SEMINAR. (1-3)

First and second semesters. Prerequisite, approval of Head of the Department. Seminars are held on topics such as microwave engineering, radiation engineering, switching theory, coding theory, non-linear circuit analysis, tensor analysis, and other topics of current interest. Since the subject matter is continually changing, a student may receive a number of credits by re-registration. (Staff.)

### E. E. 230. MATHEMATICS OF CIRCUIT ANALYSIS. (3)

First semester. Three lectures a week. Prerequisite, undergraduate major in electrical engineering or physics. Determinants, matrices, complex variable, and the Fourier integral. (Vanderslice.)

### E. E. 231. ACTIVE NETWORK ANALYSIS. (3)

Second semester. Three lectures a week. Prerequisite, E. E. 230. The complex frequency plane; conventional feedback amplifier theory; Bode's mathematical definitions of feedback and sensitivity; theorems for feedback circuits; stability and physical realizability of electrical networks; Nyquist's and Routh's criteria for stability. (Vanderslice.)

### E. E. 232, 233. NETWORK SYNTHESIS. (3, 3)

First and second semesters. Three lectures a week. Prerequisite, E. E. 231 or equivalent. Design of driving-point and transfer impedance functions with emphasis on the transfer loss and phase of minimum-phase networks; flow diagrams, physical network characteristics, including relations between the real and imaginary components of network functions. (Vanderslice.)

### E. E. 235. APPLICATIONS OF TENSOR ANALYSIS. (3)

First semester. Three lectures a week. Prerequisite, E. E. 202 or E. E. 230. Tensor notation applicable to electrical engineering problems. Applications of tensor analysis to electric circuit theory and to field theory. (Wagner.)

### E. E. 399. ELECTRICAL ENGINEERING RESEARCH.

Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Six semester hours of credit in E. E. 399 are required of M. S. degree candidates and a minimum of eighteen semester hours are required of Ph.D. candidates. A thesis covering an approved research problem and written in conformity with the regulations of the Graduate School is a partial requirement for either the degree of Master of Science or the degree of Doctor of Philosophy in electrical engineering. (Graduate Staff.)

## ENGINEERING SCIENCES

### E. S. 1. INTRODUCTORY ENGINEERING SCIENCE. (4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisite, concurrent registration in Math. 19 (or approval by department head). Basic "languages" of the engineer. Elements of graphic communication and analysis. Orthographic projection and descriptive geometry; conventions; graphs and curve-fitting. Vectors as tools of communication and analysis. Applications to geometry of engineering problems. (Wockenfuss and Staff.)

### E. S. 10. MECHANICS. (4)

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, E. S. 1 and concurrent registration in Math. 20 (or approval of

## MECHANICAL ENGINEERING

department head). Systems of rigid bodies in equilibrium under action of forces and couples. Numerical, graphical, and vectorial computation applied to problems in statics and elementary dynamics. (Wockenfuss and Staff.)

### E. S. 20. MECHANICS OF MATERIALS. (3)

First and second semesters. Three lectures a week. Prerequisites, Math. 20, Phys. 20 (or concurrent registration in Math. 20, Phys. 20) and E.S. 10. Distortion of engineering materials in relation to changes in stress or temperature. Geometry of internal strain and external displacement. Elementary application to beams, columns, shafts, tanks, trusses, and connections.

(Hayleck, Lepper, and Staff.)

### E. S. 21. DYNAMICS. (3)

First and second semesters. Three lectures a week. Prerequisites, E. S. 10; concurrent registration in Math. 20 and Phys. 20 (with which subject matter is coordinate and applied to engineering problems). Systems of heavy particles and rigid bodies at rest and in motion. Force-acceleration, work-energy, and impulse-momentum relationships. Motion of one body relative to another in a plane and in space.

(Hayleck, Lepper and Staff.)

### E. S. 30. MATERIALS SCIENCE. (3)

First and second semesters. Three lectures a week. Prerequisite, E. S. 20. Basic principles, nature, and properties of engineering materials. Structure of matter, phase transformations and mechanical properties of metals, ceramics, polymers and related materials; electrical, thermal and magnetic properties, corrosion and radiation damage, friction and wear, diffusion. (Jackson, Tabler and Dawson.)

## MECHANICAL ENGINEERING

*Professors:* SHREEVE, JACKSON AND R. W. ALLEN.

*Associate Professors:* HAYLECK, EYLER, WOCKENFUSS AND SAYRE.

*Assistant Professors:* ELKINS, JOHN, BERGER, CUNNIFF AND YANG.

*Instructors:* MARKS, OETTING, MCAULIFFE, KRAFT, TABLER, BUCKLEY, LUPIEN AND KISIELEWSKI.

*Lecturers:* SEIGEL, HABERMAN, FRANKEL, MEYERSON, DAWSON AND KRUGER.

### *For Undergraduates*

#### M. E. 1. THERMODYNAMICS I. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, Physics 20; Math. 21 concurrently. Required of sophomores in mechanical and aeronautical engineering. Properties, characteristics, and fundamental equation of gases, and vapors. Application of first and second laws of thermodynamics in the analysis of basic heat engines, air compression, and vapor cycles. Flow and non-flow processes for gases and vapors.

(Eyler and Staff.)

### *For Advanced Undergraduates and Graduates*

#### M. E. 100. THERMODYNAMICS. (3)

First semester. Two lectures and one laboratory period a week. Prerequisites,



## MECHANICAL ENGINEERING

Phys. 20, Math. 21, concurrently. The properties, characteristics, and fundamental equations of gases, and vapors. Application of the first and second laws of thermodynamics in the analysis of basic heat engines, air compression, and vapor cycles. Flow and non-flow processes for gases and vapors. (Eyler, Sayre.)

### M. E. 101. DYNAMICS OF MACHINERY. (2)

First semester. One lecture and one laboratory period a week. Prerequisites, E. S. 21; Math. 64 concurrently. Kinematics of mechanisms, and dynamic characteristics of machinery with emphasis on systems with single degree of freedom. (Hayleck, Oetting.)

### M. E. 102. FLUID MECHANICS I. (3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, M. E. 1. Laboratory fee, \$3.00. A rational study of fluids at rest and in motion. Principles of viscous and turbulent flow in pipes, nozzles, etc. Impulse and momentum. Pumps, turbines, and meters. Dimensional analysis and laws of similarity. (Sayre, John.)

### M. E. 103. MATERIALS ENGINEERING. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, E. S. 30. Laboratory fee, \$3.00. Processes and methods to manufacture and usefully apply engineering materials; alloys and heat treatment of steel; strengthening processes for ferrous and non-ferrous alloys. Fabrication techniques for metals, polymers, and refractories. Specification, inspection, control and automation. (Jackson, Tabler.)

### M. E. 104. GAS DYNAMICS. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, M. E. 102. Compressible flow in ducts and nozzles; effect of area change, heat addition, friction, and normal shocks. Thermodynamics of chemically reacting flows, combustion and equilibrium. (Sayre.)

### M. E. 105. PRINCIPLES OF MECHANICAL ENGINEERING. (3)

Second semester. Three lectures a week. Prerequisites, Phys. 21, Math 21. Required of seniors in civil engineering. Elementary thermodynamics and the study of heat, fuel and combustion in the production and use of steam for generation of power. Laboratory tests and trips to industrial plants. (Sayre, Marks.)

### M. E. 106. TRANSFER PROCESSES. (3)

First and second semesters. Three lectures a week. Prerequisite, M. E. 102. Conduction by steady state and variable heat flow; laminar and turbulent flow; free and forced convection; radiation, evaporation and condensation of vapors. Analogy between the transfer of mass, heat, and momentum. (Allen, Eyler.)

### M. E. 107. ENERGY CONVERSION. (4)

Second semester. Three lectures and one laboratory a week. Prerequisite, M. E. 100. Laboratory fee, \$3.00 per semester. Required of seniors in electrical engineering. Chemical, heat, mechanical, nuclear and electrical energy conversion processes, cycles and systems. Direct conversion processes of fuel cells, thermionics, and magnetohydrodynamics. (Allen, John.)

### M.E. 120. MEASUREMENTS LABORATORY. (2)

Second semester. One lecture and one laboratory period a week. Prerequisites, E. S. 30, M. E. 101, and E. E. 51; M. E. 106 concurrently. Laboratory fee, \$3.00.

## MECHANICAL ENGINEERING

Required of juniors in Mechanical Engineering. Measurements and measurement systems; applications of selected instruments with emphasis on interpretation of results. (Allen, Sayre.)

- M. E. 140. ENGINEERING ANALYSIS AND COMPUTER PROGRAMMING. (3)  
Second semester. Three lectures a week. Prerequisite, Math. 64. Elements of operational calculus, vector analysis; numerical methods and programming for computers. Errors, interpolation, series, integration, iteration and solution of equations. (Sayre, Tabler, Berger.)
- M. E. 150, 151. ENERGY CONVERSION. (4, 3)  
First semester. Three lectures, one laboratory a week. Second semester. Two lectures, one laboratory a week. Prerequisites, M. E. 103, M. E. 104, M. E. 106. Chemical, heat, mechanical, nuclear and electrical energy conversion processes, cycles and systems. Reciprocating, turbo- and jet-propulsion power plants and components using all types of heat and reaction sources. Direct conversion processes of fuel cells, thermionics and magnetohydronechanics. (Shreeve, Allen, John.)
- M. E. 152. MACHINE DESIGN. (3)  
First semester. Two lectures and one laboratory period a week. Prerequisites, M. E. 101, 103. Working stresses, stress concentration, stress analysis and repeated loadings. Design of machine elements. Multidegree vibration systems. (Hayleck, Jackson.)
- M. E. 153. ELASTICITY AND PLASTICITY I. (3)  
Second semester. Three lectures a week. Prerequisite, M. E. 152. Analysis of plates and shells, thick walled cylinders, columns, torsion of non-circular sections, and rotating disks. (Jackson, Hayleck, Berger.)
- M. E. 154, 155. ENGINEERING EXPERIMENTATION. (2, 2)  
First and second semesters. One lecture and one laboratory period a week. Prerequisite, senior standing in Mechanical Engineering. Laboratory fee, \$6.00 per semester. Theory of experimentation. Selected experiments emphasize planned procedure, analysis and communications of results, analogous systems and leadership. (Allen, Sayre.)
- M. E. 156, 157. MECHANICAL ENGINEERING ANALYSIS AND DESIGN. (3, 4)  
First semester, two lectures, one laboratory period per week; second semester, two lectures and two laboratory periods per week. Prerequisite, senior standing in Mechanical Engineering. Creative engineering and problem analysis. Systems design including control, reliability and manufacturing requirements. Use of computers in design. Design of multi-variable systems. (Hayleck, Sayre, Cunniff, Oetting.)
- M. E. 161. ENVIRONMENTAL ENGINEERING. (3)  
Second semester. Three lectures a week. Prerequisites, M. E. 101, 106, senior standing in Mechanical Engineering. Heating and cooling load computations. Thermodynamics of refrigeration systems. Low temperature refrigeration. Problems involving extremes of temperature, pressure, acceleration and radiation. (Marks.)
- M. E. 162. DYNAMICS II. (3)  
Three lectures a week. Prerequisites, M. E. 101, Math. 64, senior standing in Mechanical Engineering. Linear and non-linear plane and three-dimensional

## MECHANICAL ENGINEERING

motion, moving axes, Lagrange's equation, Hamilton's principle, non-linear vibration, gyroscope, celestial mechanics. (Hayleck, Cunniff.)

### M. E. 163. FLUID MECHANICS II. (3)

Three lectures a week. Prerequisites, M. E. 104, M. E. 106, senior standing. Hydrodynamics with engineering applications. Stream function and velocity potential; conformal transformations; pressure distributions; circulation; numerical methods and analogies. (John, Kraft.)

### M. E. 164. THERMODYNAMICS II. (3)

Three lectures a week. Prerequisites, M. E. 104, M. E. 106, senior standing. Applications to special systems, change of phase, low temperature. Statistical concepts, equilibrium, heterogenous systems. (Eyler, Allen.)

### M. E. 165. AUTOMATIC CONTROLS. (3)

Three lectures per week. Prerequisites, E. E. 52, senior standing. Hydraulic, electrical, mechanical and pneumatic automatic control systems. Open and closed loops. Steady state and transient operation, stability criteria, linear and non-linear systems. Laplace transforms. (Shreeve, Yang.)

### M. E. 166. SPECIAL PROBLEMS. (3)

Three lectures a week. Prerequisite, senior standing in Mechanical Engineering. Advanced problems in mechanical engineering with special emphasis on mathematical and experimental methods. (Staff.)

### M. E. 167. OPERATIONS RESEARCH I. (3)

Three lectures a week. Prerequisite, senior standing in Mechanical Engineering. Applications of linear programming, queuing model, theory of games and competitive models to engineering problems.

### M. E. 168, 169. SOLID STATE FOR ENGINEERS. (3, 3)

Three lectures a week. Prerequisite, E. S. 30. Advanced study of the behavior of solid materials. Structure of matter; equilibrium and rate processes; metallic and molecular solids; theory of dislocation; mechanical, thermal, electrical, optical, and other properties. (Jackson, Frankel.)

## *For Graduates*

### M. E. 200, 201. ADVANCED DYNAMICS. (3, 3)

First and second semesters. Prerequisites, E. S. 21, Math. 64, M. E. 153, M. E. 157, Mechanics of machinery. Dynamic force. Balancing of rotating parts. Vibrations and vibration damping. Critical speeds. (Cunniff.)

### M. E. 202, 203. APPLIED ELASTICITY. (3, 3)

First and second semesters. Prerequisites, E. S. 20, Math. 64, M. E. 153. Advanced methods in structural and experimental stress analysis involving beam problems, curved bars, thin plates and shells, buckling of bars, plates and shells. Stress concentrations, plastic deformations, and problems involving instability of structures. (Berger.)

### M. E. 204, 205. ADVANCED THERMODYNAMICS. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M. E. 104, M. E. 106, M. E. 151, Math. 64. Advanced problems in thermodynamics on compression of gases and liquids, combustion and equilibrium, humidification



## MECHANICAL ENGINEERING

and refrigeration and availability. Problems in advanced heat transfer covering the effect of radiation, conduction, and convection, steady and unsteady flow, evaporation and condensation. (Shreeve, Allen.)

### M. E. 206, 207. ADVANCED MACHINE DESIGN. (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Math. 64, M. E. 153, M. E. 157. Design of special stationary and moving parts, including rotating disk, bearings, thick wall cylinders, screw fastenings, crankshafts, etc. Linear and torsional vibration and balancing in the design of machine members. Complete design of a machine. Study of current design literature.

(Jackson.)

### M. E. 208, 209. DESIGN OF TURBOMACHINERY. (3, 3)

First and second semesters. Prerequisite, M. E. 151. Characteristics and design of turbines, pumps, compressors and torque convertors; cavitation, stall, and surge.

(Shreeve.)

### M. E. 210, 211. ADVANCED FLUID MECHANICS. (3, 3)

First and second semesters. Prerequisites, M. E. 102, Math. 64 or equivalent. Potential flow theory; three dimensional flow examples; application of complex variables to two-dimensional flow problems; Blasius theorem, circulation and Joukowski hypothesis, engineering applications to cavitation and calculation of pressure distribution; viscous flow and boundary layer.

(Sayre, Haberman.)

### M. E. 212, 213. ADVANCED VIBRATIONS. (3, 3)

First and second semesters. Prerequisite, M. E. 157. Review of single and multi-degrees of freedom. Laplace methods. Effects of pulse shape on response of linear and non-linear systems; friction, hysteresis and variable damping.

(Seigel, Cunniff.)

### M. E. 214, 215. STRESS WAVES IN CONTINUOUS MEDIA. (3, 3)

First and second semesters. Prerequisite, M. E. 153 and M. E. 157. Method of characteristics applied to transient phenomena in solids and fluids. Elastic and plastic waves under impact. Shock formation and strain rate effects.

(Seigel, Cunniff.)

### M. E. 216, 217. ENERGY CONVERSION THEORY. (3, 3)

First and second semesters. Prerequisite, M. E. 151. Combustion, thermoelectric, thermionic, fuel cells, reactors, magnetohydrodynamics. Kinetics of reactions, fission and fusion.

(Shreeve.)

### M. E. 218, 219. ENERGY CONVERSIONS SYSTEMS. (3, 3)

First and second semesters. Prerequisite, M. E. 217. Design parameters in chemical, nuclear and direct conversion systems for the production of power; weight, efficiency and radiation.

(Shreeve.)

### M. E. 220. SEMINAR.

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering.

(Staff.)

### M. E. 222. ADVANCED METALLOGRAPHY. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, M. E. 103, E. S. 20. Structure and properties of metals and alloys. Ferrous and non-ferrous alloys including stainless steels, high temperature steels, tool steels, aluminum, magnesium and copper alloys. Inspection of metals by the use of x-rays, spectograph, metallograph and magniflux. Review of current literature.

(Jackson, Frankel.)



**M. E. 223, 224. THEORY OF PLASTICITY. (3, 3)**

First and second semesters. Prerequisite, M. E. 153. Yield criteria and associated flow rules in the theory of elastic-plastic solids, including perfectly plastic, elastic-plastic and strain-hardening materials. Torsion, plane problems and three-dimensional problems in plasticity. (Berger, Jackson.)

**M. E. 225, 226. ADVANCED PROPERTIES OF METALS AND ALLOYS. (3, 3)**

First and second semesters. Three lectures a week. Prerequisite, E. S. 30, M. E. 103, M. E. 152, M. E. 153. Tensile, impact, fatigue, damping capacity, hardenability, wear, etc. Fabrication problems and selection of metals and alloys. Service failures. Properties required for nuclear engineering applications. (Jackson, Meyerson.)

**M. E. 227, 228. THEORY OF ELASTICITY. (3, 3)**

First and second semesters. Three lectures a week. Prerequisites, M. E. 202, 203. Stress and strain at a point. Relation between stresses and strains, general equations of elasticity, plane strain and plane stress, torsion, bending, axially symmetric distribution of stress, plates, thermal stresses, strain energy and approximate methods. (Berger.)

**M. E. 229, 230. JET PROPULSION. (3, 3)**

First and second semesters. Three lectures a week. Prerequisites, M. E. 150, M. E. 151. Types of thermal jet units. Fluid reaction and propulsive efficiency. Performance of rockets, aerothermodynamics, combustion chemical kinetics, aerodynamics of high speed air flow. Solid and liquid propellant rockets. Design of turbojets and aerojets, ramjets and hydroduct units, including combustion chambers, turbines and compressor. (Shreeve.)

**M. E. 231, 232. ADVANCED HEAT TRANSFER. (3, 3)**

First and second semesters. Three lectures a week. Prerequisites, M. E. 150, M. E. 151. Advanced problems covering effects of radiation, conduction, convection, evaporation and condensation. Study of research literature on heat transfer. (Shreeve, Allen.)

**M. E. 233, 234. COMPRESSIBLE FLOW. (3, 3)**

First and second semesters. Prerequisite, M. E. 104, Math. 64 or equivalent. One dimensional subsonic and supersonic flow; compressible flow in ducts and nozzles; two and three dimensional subsonic and supersonic flow; similarity rules; normal and oblique shock waves. (Sayre, Haberman.)

**M. E. 235, 236. MATERIALS AND THEIR ENVIRONMENT. (3, 3)**

Three lectures a week. Prerequisites, M. E. 225, 226. Problems involving materials subjected to extreme temperatures, nuclear bombardment and radiation damage, corrosion and oxidation, impact and flutter, thermal shock, high pressure and high vacuum. (Jackson, Meyerson.)

**M. E. 237. X-RAY AND DIFFRACTION TECHNIQUES. (3)**

Two lectures and one laboratory period a week. Prerequisite, M. E. 222. Advanced work in X-ray and diffraction techniques, electron microscopes, and optical microscopes, in the study of the structure of materials.

(Kruger.)

## FIRE PROTECTION

### M. E. 399. RESEARCH.

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering. Research in any field of mechanical engineering as applied mechanics, heat transfer, thermodynamics, heat, power, etc. (Staff.)

## FIRE PROTECTION

*Professor:* BRYAN.

*Assistant Professor:* HICKEY.

### F. P. 104. ESSENTIALS OF FIRE PROTECTION. (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, Math. 20, Physics 20 or Junior standing. An introductory course in fire protection. Chemistry of combustion and an analysis of the properties of matter affecting fire behavior. Detailed examination of the basic fire phenomenon.

### F. P. 105. FIRE PROTECTION ORGANIZATION. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, F. P. 104 or Junior standing. Fire loss records, and the economic aspects of fire protection. Organization and administration of municipal and industrial fire protection.

### F. P. 110. INSTALLATIONS AND EQUIPMENT. (4)

Second semester. Two lectures and one laboratory period a week. Prerequisite, F. P. 104. The design and installation of standard and special extinguishing systems. Standards of types, installation and maintenance of automatic sprinkler and fire alarm systems. The principles of fire extinguishment with laboratory tests.

### F. P. 111. SPECIAL HAZARDS AND PROBLEMS. (4)

First semester. Three lectures and one laboratory period a week. Prerequisite Senior standing. Special hazards in fire protection. A study of present and future problems, with the students selecting field or laboratory research problems.

### F. P. 112. FIRE PROTECTION FLUIDS AND SYSTEMS. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, C. E. 102. Fluids utilized in fire extinguishment operations, and fire protection systems. Laboratory and field study of operational and hydraulics problems.

### F. P. 114. FIRE ANALYSIS. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, F. P. 105 and Senior standing. The mass fire problem, with consideration of conflagrations and fire storms; thermal, structural, environmental, and meteorological factors; techniques of prediction and fuel analysis.

### F. P. 117. TECHNICAL PROJECTS. (4)

Second semester. Three lectures and one laboratory period a week. Prerequisite, F. P. 111, and Senior standing. An examination of the specialized areas of fire protection and the development of problems in these areas. Student development and discussion of research projects in specialized areas of fire protection.

F. P. 120. INSURANCE RATING AND SCHEDULES. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, Math. 21, Physics 21 or Junior standing. A study of the insurance grading and rating schedules and their principles of application. The examination of specific laws, codes and ordinances. Laboratory practice in the preparation of reports and diagrams.

# THE FACULTY\*

## COLLEGE OF ENGINEERING GLENN L. MARTIN INSTITUTE OF TECHNOLOGY

MAVIS, FREDERIC THEODORE, Dean  
ALLEN, RUSSELL BENNETT, Associate Dean

### *Department Heads*

ALLEN, Gordon Owen, Librarian, Engineering and Physical Sciences  
BECKMANN, Robert Bader, Head, Department of Chemical Engineering  
BRYAN, John Leland, Head, Fire Protection Curriculum  
BYRUS, Robert Charles, Director, Fire Service Extension  
GROSS, Donald Shaeffer, Director, Wind Tunnel Operations  
LOONEY, Charles Thomas George, Head, Department of Civil Engineering  
MARTIN, Monroe Harnish, Director, Institute for Fluid Dynamics and Applied Mathematics  
SHERWOOD, Aaron Wiley, Head, Department of Aeronautical Engineering.  
SHREEVE, Charles Alfred, Jr., Head, Department of Mechanical Engineering  
TOMPKINS, Howard E., Head, Department of Electrical Engineering

### *Staff in Residence*

ALLEN, Gordon Owen, Librarian, Engineering and Physical Sciences  
B.A., Michigan State University, 1949; A.M., University of Michigan, 1956.  
ALLEN, Redfield Wilmerton, Professor of Mechanical Engineering  
B.S., University of Maryland, 1943; M.S., 1949; Ph.D., University of Minnesota, 1959.  
ALLEN, Russell Bennett, Associate Dean of the College of Engineering and Professor of Civil Engineering  
B.S., Yale University, 1923; Registered Professional Engineer.  
ANTRIM, John D., Instructor in Civil Engineering  
B.S., in C.E., Lehigh University, 1956; M.S., in C.E., Purdue University, 1958.  
BACHTLER, Joseph deRolle, Senior Instructor, Fire Service Extension  
B.S., University of Southern California, 1956.  
BARBER, Edward Sewell, Associate Professor of Civil Engineering  
B.S., University of Maryland, 1935; C.E., 1952; Registered Professional Engineer.  
BECKMANN, Robert Bader, Professor of Chemical Engineering and Head of the Department  
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\* As of November 1, 1963.



## FACULTY

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- BUCHANAN, John David, Instructor in Mechanical Engineering  
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## FACULTY

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## FACULTY

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## FACULTY

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- WEINSTEIN, Alexander, Research Professor, Institute for Fluid Dynamics and  
Applied Mathematics  
Ph.D., Zurich, 1921; Docteur es Sciences, University of Paris, France, 1937.
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## FACULTY

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- WILKERSON, Thomas Delaney, Research Assistant Professor, Institute for Fluid Dynamics and Applied Mathematics  
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- WINDSOR, Richard Isaac, Assistant Director, Wind Tunnel Operations  
B.S., University of Maryland, 1950; M.S., 1960.
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B.S., University of Maryland, 1949; M.Ed., 1952; Ed.D., University of Florida, 1960.
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B.S., University of Maryland, 1958; M.S., 1962; Ph.D., 1963.
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- HOGAN, Douglas LeRoy, Lecturer in Electrical Engineering  
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- KRUGER, Jerome, Lecturer in Mechanical Engineering  
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- LOBB, R. Kenneth, Lecturer in Aeronautical Engineering  
B.S., University of Alberta, 1947; M.S., University of Toronto, 1948; Ph.D., 1950.
- MONTROLL, Elliott Waters, Lecturer, Institute for Fluid Dynamics and Applied Mathematics  
B.S. (Chem), University of Pittsburgh, 1937; Ph.D. (Math) 1940.

## FACULTY

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CATALOG OF THE  
COLLEGE  
OF  
HOME  
ECONOMICS  
1964-66

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OF  
MARYLAND

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## COURSE OFFERINGS

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# UNIVERSITY CALENDAR, 1963-64

## *Fall Semester 1963*

September 16-20	Monday-Friday	Fall Semester Registration
September 23	Monday	Instruction Begins
November 27	Wednesday	Thanksgiving Recess Begins After Last Class
December 1	Monday	Thanksgiving Recess Ends 8 a.m.
December 20	Friday	Christmas Recess Begins After Last Class

## *1964*

January 6	Monday	Christmas Recess Ends 8 a.m.
January 22	Wednesday	Pre-Examination Study Day
January 23-30	Thursday-Wednesday inclusive	Fall Semester Examinations

## *Spring Semester*

February 3-7	Monday-Friday	Spring Semester Registration
February 10	Monday	Instruction Begins
February 22	Saturday	Washington's Birthday, Holiday
March 25	Wednesday	Maryland Day, not a holiday
March 26	Thursday	Easter Recess Begins After Last Class
March 31	Tuesday	Easter Recess Ends, 8 a.m.
May 13	Wednesday	AFROTC Day
May 28	Thursday	Pre-Examination Study Day
May 29-June 5	Friday-Friday	Spring Semester Examinations
May 30	Saturday	Memorial Day, Holiday
May 31	Sunday	Baccalaureate Exercises
June 6	Saturday	Commencement Exercises

## *Summer Session 1964*

June 22	Monday	Summer Session Registration
June 23	Tuesday	Summer Session Begins
July 4	Saturday	Independence Day, Holiday
August 14	Friday	Summer Session Ends

## *Short Courses 1964*

June 15-19	Monday-Saturday	Rural Women's Short Course
August 3-7	Monday-Saturday	4-H Club Week
September 8-11	Tuesday-Friday	Firemen's Short Course



# UNIVERSITY CALENDAR, 1964-65

(Tentative)

## *Fall Semester 1964*

September 14-18	Monday-Friday	Fall Semester Registration
September 21	Monday	Instruction Begins
November 25	Wednesday	Thanksgiving Recess Begins After Last Class
November 30	Monday	Thanksgiving Recess Ends 8 a.m.
December 22	Tuesday	Christmas Recess Begins After Last Class

## *1965*

January 4	Monday	Christmas Recess Ends 8 a.m.
January 20	Wednesday	Pre-Examination Study Day
January 21-27	Thursday-Wednesday	Fall Semester Examinations

## *Spring Semester*

February 2-5	Tuesday-Friday	Spring Semester Registration
February 8	Monday	Instruction Begins
February 22	Monday	Washington's Birthday, Holiday
March 25	Thursday	Maryland Day, not a Holiday
April 15	Thursday	Easter Recess Begins After Last Class
April 20	Tuesday	Easter Recess Ends 8 a.m.
May 12	Wednesday	AFROTC Day
May 27	Thursday	Pre-Examination Study Day
May 28-June 4	Friday-Friday	Spring Semester Examinations
May 30	Sunday	Baccalaureate Exercises
May 31	Monday	Memorial Day, Holiday
June 5	Saturday	Commencement Exercises

## *Summer Session*

June 21	Monday	Summer Session Registration
June 22	Tuesday	Summer Session Begins
July 5	Monday	Independence Day, Holiday
August 13	Friday	Summer Session Ends

## *Short Courses*

June 14-18	Monday-Friday	Rural Women's Short Course
August 2-6	Monday-Friday	4-H Club Week
September 7-10	Tuesday-Friday	Firemen's Short Course

# Board Of Regents

and

## Maryland State Board Of Agriculture

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*McCormick and Company, Inc., 414 Light Street, Baltimore, 21202*

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## *Principal Administrative Officers*

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B.A., University of Texas, 1932; M.A., 1932; B.Litt., Oxford University, 1936; D.Phil., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.

R. LEE HORNBACE, *Vice President for Academic Affairs*

B.S., California State College, Pa., 1934; M.A., Ohio State University, 1936; Ph.D., 1942.

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## *Emeriti*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.Sc., Western Maryland College, 1938.

ADELE H. STAMP, *Dean of Women Emerita*

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RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; Ph.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health.*

B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agriculture Experiment Station*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

VERL S. LEWIS, *Dean of the School of Social Work*

A.B., Huron College, 1933; M.A., University of Chicago, 1939; D.S.W., Western Reserve University, 1954.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; Ph.D., Pennsylvania State University, 1953.

CHARLES MANNING, *Acting Dean of the College of Arts and Sciences*

B.S., Tufts College, 1929; M.A., Harvard University, 1931; Ph.D., University of North Carolina, 1950.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; Ph.D., 1935.

DONALD W. O'CONNELL, *Dean of the College of Business and Public Administration*

B.A., Columbia University, 1937; M.A., 1938; Ph.D., 1953.

JOHN J. SALLEY, *Dean of the School of Dentistry*

D.D.S., Medical College of Virginia, 1947; Ph.D., University of Rochester School of Medicine and Dentistry, 1954.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D. (Hon.), University of Louisville, 1946.

### *General Administrative Officers*

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

B. JAMES BORRESON, *Executive Dean for Student Life*

B.A., University of Minnesota, 1944.

C. WILBUR CISSEL, *Director of Finance and Business*

B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.



HELEN E. CLARKE, *Dean of Women*

B.S., University of Michigan, 1943; M.A., University of Illinois, 1951; Ed.D., Teachers College, Columbia University, 1960.

WILLIAM W. COBEY, *Director of Athletics*

A.B., University of Maryland, 1930.

L. EUGENE CRONIN, *Director of Natural Resources Institute*

A.B., Western Maryland College, 1938; M.S., University of Maryland, 1943; Ph.D., 1946.

LESTER M. DYKE, *Director of Student Health Service*

B.S., University of Iowa, 1936; M.D., 1926.

GEARY F. EPPLEY, *Dean of Men*

B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.

HARRY D. FISHER, *Comptroller and Budget Officer*

B.S., University of Maryland, 1943; C.P.A., 1948.

GEORGE W. FOGG, *Director of Personnel*

B.A., University of Maryland, 1926; M.A., 1928.

ROBERT J. McCARTNEY, *Director of University Relations*

B.A., University of Massachusetts, 1941.

GEORGE W. MORRISON, *Associate Director and Supervising Engineer, Physical Plant (Baltimore)*

B.S., University of Maryland, 1927; E.E., 1931.

VERNON H. REEVES, *Professor of Air Science and Head, Department of Air Science*

B.A., Arizona State College, 1936; M.A., Columbia University, 1949.

WERNER C. RHEINBOLDT, *Director, Computer Science Center*

Dipl. Math., University of Heidelberg, 1952; Dr. Rer. Nat., University of Freiburg, 1955.

HOWARD ROVELSTAD, *Director of Libraries*

B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.

CLODUS R. SMITH, *Director of the Summer Session*

B.S., Oklahoma State University, 1950; M.S., 1955; Ed.D., Cornell University, 1960.

GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant.*

B.S., University of Maryland, 1933.

### *Division Chairmen*

JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*

B.S., University of Maryland, 1926; M.S., 1927; Ph.D., 1937.

HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*

B.S., Northwestern University, 1921; M.A., 1923; Ph.D., Cornell University, 1929.

CHARLES E. WHITE, *Chairman of the Lower Division*

B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.

## CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

### GENERAL COMMITTEE ON EDUCATIONAL POLICY

Monroe H. Martin (Arts and Sciences), Chairman

### GENERAL COMMITTEE ON STUDENT LIFE AND WELFARE

Joseph F. Mattick (Agriculture), Chairman

### COMMITTEE ON ADMISSIONS AND SCHOLASTIC STANDING

Russell B. Allen (Engineering), Chairman

### COMMITTEE ON INSTRUCTIONAL PROCEDURES

Thomas G. Andrews (Arts and Sciences), Chairman

### COMMITTEE ON SCHEDULING AND REGISTRATION

Richard H. Byrne (Education), Chairman

### COMMITTEE ON PROGRAMS, CURRICULA, AND COURSES

V. R. Cardozier (Agriculture), Chairman

### COMMITTEE ON FACULTY RESEARCH

James A. Hummel (Arts and Sciences), Chairman

### COMMITTEE ON PUBLIC FUNCTIONS AND COMMENCEMENTS

Donald W. O'Connell (Business and Public Administration), Chairman

### COMMITTEE ON LIBRARIES

Walter E. Schlaretzki (Arts and Sciences), Chairman

### COMMITTEE ON UNIVERSITY PUBLICATIONS

Mark Keeny (Agriculture), Chairman

### COMMITTEE ON INTERCOLLEGIATE COMPETITION

Robert B. Beckmann (Engineering), Chairman

### COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM AND TENURE

George Anastos (Arts and Sciences), Chairman

### COMMITTEE ON APPOINTMENTS, PROMOTIONS, AND SALARIES

Stanley B. Jackson (Arts and Sciences), Chairman

### COMMITTEE ON FACULTY LIFE AND WELFARE

John M. Brumbaugh (Law), Chairman

### COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Noel E. Foss (Pharmacy), Chairman

### COMMITTEE ON COUNSELING OF STUDENTS

Mary K. Carl (Nursing), Chairman

### COMMITTEE ON THE FUTURE OF THE UNIVERSITY

Homer Ulrich (Arts and Sciences), Chairman

*Adjunct Committees of the General Committee of Student  
Life and Welfare*

STUDENT ACTIVITIES

Gayle S. Smith (Arts and Sciences), Chairman

FINANCIAL AIDS AND SELF-HELP

A. B. Hamilton (Agriculture), Chairman

STUDENT PUBLICATIONS AND COMMUNICATIONS

George F. Batka (Arts and Sciences), Chairman

RELIGIOUS LIFE

Bryce Jordan (Arts and Sciences), Chairman

STUDENT HEALTH AND SAFETY

Ellen Harvey (Physical Education), Chairman

STUDENT DISCIPLINE

J. Allan Cook (Business and Public Administration), Chairman

BALTIMORE CAMPUS, STUDENT AFFAIRS

Calvin Gaver (Dentistry), Chairman





# THE COLLEGE

The College of Home Economics serves Maryland and surrounding areas with its program for the education of young men and women interested in the social, economic, scientific and aesthetic aspects of homemaking and of family living in relation to the community. The educational offerings of the College are planned to help students function effectively and creatively as individuals, as family members and as responsible citizens; to prepare them for positions for which home economics is a major or minor preparation; and to promote an appreciation for and utilization of the findings of research. The College is concerned with contributing to the education for home and family life of women and men enrolled in other schools and colleges as well as those majoring in home economics.

The over-all function of home economics is to integrate the contributions of the physical and biological sciences, the social sciences, psychology, philosophy and art in the treatment of all phases of home and family life, to the end that they are used by families in all parts of society and by the agencies serving families.

The College of Home Economics is organized into the Departments of Food, Nutrition, and Institution Administration; Family Life and Management; Housing and Applied (Art) Design; and Textiles and Clothing. The curricula offered are: General (foundation) home economics; applied art (merchandising, advertising, crafts, costume, and interior design); food, nutrition, and related science; home economics education; home economics extension; family life and management; institution administration; textiles and clothing; and textiles and related science.

## SPECIAL FACILITIES AND ACTIVITIES

### PHYSICAL FACILITIES

The home of the College of Home Economics, following campus tradition, is a colonial brick building, planned and built to present modern equipment and facilities for education in home economics. A management center is maintained on the campus for resident experiences in management activities of family life.

Located, as the campus is, between two large cities, unusual opportunities are provided for both faculty and students. In addition to the University's general and specialized libraries, Baltimore and Washington furnish added library facilities. The art galleries and museums, the government bureaus and city institutions stimulate study and provide enriching experiences for home economics students.

## SPECIAL FACILITIES AND ACTIVITIES

### SOCIETIES

Home Economics Chapter: Membership is open to all home economics students. The club is affiliated with the Maryland and American Home Economics Associations.

Omicron Nu, national home economics honor society: Students of high scholarship are eligible for election to membership.

N.S.I.D. A student chapter affiliated with the National Society of Interior Designers.

Gamma Alpha Chi: National professional advertising fraternity for women.

Student Faculty Council: An advisory group, elected by students and faculty, to promote the interests of the College of Home Economics.

### HONORS AND AWARDS, SCHOLARSHIPS AND LOAN FUND

The Danforth Foundation and the Ralston Purina Company Summer Fellowships: One of four weeks to an outstanding junior; one of two weeks to an outstanding freshman.

Borden Home Economics Scholarship Award: Three hundred dollars is given by the Borden Company to the home economics student who, upon entering her senior year, has completed two or more courses in food and nutrition and has the highest scholastic average of eligible students.

Omicron Nu Scholarship Award: Omicron Nu presents annually an award to the sophomore in the College of Home Economics who has attained the highest scholastic average during the freshman year.

M. Marie Mount Memorial Scholarship: Two hundred fifty dollars is awarded each year to a junior or senior student who shows outstanding potential as a professional home economist.

Sears Roebuck Scholarships: The Sears Roebuck Foundation has made available to freshmen in the College of Home Economics two scholarships of three hundred dollars each.

The Executive Stewards and Caterers Scholarships: The Executive Stewards and Caterers Association has made available two scholarships of two hundred fifty dollars each to juniors or seniors who are preparing for a career as food manager or dietitian.

Venia M. Kellar Grant: A grant of one hundred dollars is open to a Maryland student of promise who wishes to enroll in the College of Home Economics.

A loan fund, composed of contributions by the District of Columbia Home Economics Association, Maryland Chapter of Omicron Nu, and personal gifts, is available for students majoring in home economics.

## SPECIAL FACILITIES AND ACTIVITIES

**Home Economics Senior Award:** The Home Economics Alumni annually present an award to the senior student who is outstanding in her application of the spirit and principles of home economics in her present living and who best shows promise of carrying these into her future home and community.

For other scholarships and awards, see *Adventure in Learning*.

## ACADEMIC INFORMATION

### ADMISSION

#### *Fall Semester*

All applications for full-time undergraduate admission for the Fall Semester at the College Park Campus must be received by the University on or before July 15. Any student registering for seven (7) or more semester hours of work is considered a full-time student.

Under unusual circumstances, applications will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$15.00 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10.00 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission must be received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

#### *Spring Semester*

The deadline for the receipt of applications for the Spring Semester is January 1.

#### *University College*

The application deadlines and fees *do not* apply to students registering in the evening classes offered by the University College.

#### *Graduate School*

Application for admission to the Graduate School must be made by September 1 for the fall term and by January 1 for the spring term on

## ACADEMIC INFORMATION

blanks obtained from the Office of the Graduate School. Admission to the summer session is governed by the date listed in the Summer School catalog. The summer session deadline date is generally June 1.

All students desiring to enroll in the College of Home Economics must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students emphasis will be placed upon good marks and other indications of probable success in college as well as upon the pattern of subjects pursued in high school. In general, 4 units of English and 1 unit each of social and natural sciences, algebra and plane geometry are required. While foreign language is desirable for certain programs no foreign language is required for entrance.

## COSTS

Actual annual costs of attending the University include \$250.00 fixed charges; \$96.00 special fee; \$420.00 board; \$290-\$320.00 lodging for Maryland residents, or \$340-\$370.00 for residents of other states and countries. A charge of \$400.00 is assessed students not residents of the State of Maryland. A matriculation fee of \$10.00 is charged all new students. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee.

*An Adventure in Learning*, the undergraduate catalog of the University, contains a detailed statement of fees and expenses and includes changes in fees as they occur. A copy may be requested from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park.

Senior students enrolled in Home Mgt. 161 are considered resident students and will be charged room rent at the same rate as the women's residence hall. Students living off-campus will be charged room rent for the five-week period of home management residence. (See page 33.)

## DEGREES

The degree of Bachelor of Science is conferred for the satisfactory completion, with an average of "C" or better, of a prescribed curriculum of 120 academic semester hour credits. This is exclusive of health and physical activities for women and air science and physical activities for men. No grade below a "C" is acceptable in courses within the field chosen as a major.

The Master of Science degree is offered in food, nutrition and institution administration; in textiles and clothing; and in related areas of home economics in the College of Home Economics, also in home economics



education in the College of Education. (See the Graduate School Announcements.)

### AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science training for a period of two semesters. The successful completion of this sequence is a prerequisite for graduation, and must be taken by all eligible students during the first two semesters of attendance at the University. Transfer students who do not have the required two semesters of air science training will be required to complete the sequence or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses during their junior and senior years which may lead to a regular or reserve commission in the United States Air Force.

For further details concerning Air Science, refer to *University General and Academic Regulations*, a publication available to all entering undergraduate students.

### THE STUDENT LOAD

The student load in the College of Home Economics varies from 15-18 credits. A student wishing to carry more than 18 credits must have a "B" grade average and permission of the Dean.

### CURRICULA\*

A student may elect one of the following curricula, or a combination of curricula: food, nutrition or institution administration (food service); general (foundation) home economics; home economics education; home economics extension; housing, applied (art) design or crafts; and textiles or textiles and clothing. A student who wishes to teach home economics may register in home economics education in the College of Home Economics or in the College of Education.

### AMERICAN CIVILIZATION PROGRAM

The University considers it important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American civilization designed to provide the student with this general educational background. (See *University General and Academic Regulations*.)

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the

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\*In order to meet the particular need of a student, certain adjustments in these requirements may be made with the approval of the student's adviser and Dean.

## ACADEMIC INFORMATION

American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

Through such testing a student may be released from 3 hours of English, 3 hours of American history, and 3 hours of American government, leaving 9 hours of English and 3 hours of American history as absolute requirements. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take 3 hours from one of the sequences H. 41-42, 51-52, 61-62, or 71-72 instead of H. 5 and 6.

The following courses required of all home economics majors may apply to the American Civilization Program: Econ. 37, Soc. 1, and Psych. 1.

## GENERAL INFORMATION

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life may be found in the University publication titled, *University General and Academic Regulations*.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

# REQUIRED COURSES

The curricula leading to a major in the College of Home Economics are organized into three categories: (1) Technical areas, (2) educational, community, and family life areas, and (3) commercial consumer service (related art) areas. These represent the broad professional fields into which graduates are eligible to enter and pursue their chosen work. The positions vary in nature, scope, and title but require similar general studies background and fundamentals for specialization. (See page 5.)

Individual programs of study are developed cooperatively with faculty advisers to provide a balanced and sequential arrangement of studies in preparation for the chosen field. University, college, departmental, and interdepartmental requirements are identified for curricula in each of the categories described above.

All students in the College of Home Economics are required to complete a series or sequence of courses to satisfy University requirements and departmental requirements. The remaining courses needed to complete a program of study are elected by the student with the approval of his adviser.

UNIVERSITY REQUIREMENTS	<i>Semester Credit Hours</i>
*Eng. 1, 2—Composition and American Literature.....	6
*G. & P. 1—American Government.....	3
Soc. 1—Sociology of American Life or alternate.....	3
Eng. 3, 4—Composition and World Literature.....	6
*Hist. 5, 6—History of American Civilization.....	6
Total.....	24
For Men:	
Basic Air Science.....	4
Physical Activities.....	4
Total.....	8
For Women:	
Health 2, 4—Personal and Community Health.....	4
Physical Activities.....	4
Total.....	8

\*For classification tests and alternate courses, see Program in American Civilization, published in *University General and Academic Regulations*.

## DEPARTMENTAL REQUIREMENTS

### COLLEGE OF HOME ECONOMICS REQUIREMENTS\*\*

Semester Credit  
Hours

H. E. 5—Introduction to Family Living through Home Economics	2
A. D. 1—Design	3
F. & N. 5—Food and Nutrition of Individuals and Families	3
H. M. 50—Decision Making in Family Living	3
T. & C. 5—Textiles and Clothing in Contemporary Living	3
H. E. 180—Professional Seminar	2
Speech 7 or 1 Public Speaking	2-3
Total	18-19

## DEPARTMENTAL REQUIREMENTS

Required courses are determined by the department making major contributions to the specific curriculum or program of study. Supporting and elective courses are approved by the adviser of the student's program.

The program of courses for the freshman year is essentially the same for all students. However, there are some variations and modifications in several curricula.

FRESHMAN YEAR	Semester	
	I	II
*Eng. 1, 2—Composition and American Literature	3	3
*G. & P. 1—American Government	3	(3)
*Soc. 1—Sociology of American Life or alternate	(3)	3
A. S. 2, 3—Basic Air Science (men)	2†	2
Physical Activities—men and women	1	1
Health 2, 4—Personal Health, Community Health (women)	2	2
H. E. 5—Introduction to Family Living Through H. E.	2	(2)
Choice of college requirements:	3	3
T & C 5—Textiles and Clothing in Contemporary Living		
F & N 5—Food and Nutrition of Individuals and Families		
A. D. 1—Design		
Choice of Speech 7 or 1—Public Speaking	(2-3)	2-3
†Choice of:		
Bot. 1—General Botany; Chem. 1, 3 or 11, 13—General Chemistry; Ent. 1—Introductory Entomology; Geog. 1, 2—Economic Resources; Phys. 1, 2—Elements of Physics; Microb. 1—General Microbiology; Zool. 1—General Zoology	2-4	(2-4)
Total	18-20	16-17

\*American Civilization Program

\*\*Men students enrolled in the College of Home Economics will be required to take a minimum of three of the college requirements with the remaining credit hours selected from the humanities, upon approval of the adviser and Dean.

†Choice dependent upon curriculum being pursued. Adviser's approval necessary.



### HOME ECONOMICS IN TECHNICAL AREAS

Preparation for entering technical fields in home economics and related areas combines a strong scientific background with general education, an understanding of personal and family life, and specific knowledge in one or more of the areas leading to technical positions. Curricula or programs of study offered in the several departments directed toward the following can be pursued by undergraduate students: Textile technology, commercial foods, fashion merchandising and design, hospital and institution dietetics, advertising, basic and applied research in the several areas of home economics, apparel design and construction, nutrition and related science, and household equipment (technology and utilization).

### TECHNICAL CURRICULA

University requirements (see page 8)

College of Home Economics requirements (see page 8)

### FOOD, NUTRITION, AND INSTITUTION ADMINISTRATION

Graduates of the food and nutrition curriculum find positions in the consumer education departments of a wide variety of food and equipment industries, magazine and advertising firms, doing testing, editorial or promotion work. They may become nutritionists with industry or in state or community programs. The curriculum also prepares students for graduate study, research, or work as laboratory technicians.

The institution administration curriculum prepares students for food service administration in such institutions as hospitals, colleges and public schools; in commercial organizations: restaurants, inns, hotels, and industrial food service. Institution administration majors meet the academic requirements for entrance to a dietetic internship approved by the American Dietetic Association. Students following this major are required to have, before the senior year, field experience in food service. This experience must be satisfactory in length of time, type, and quality of work.

Men specializing in either the food and nutrition or institution administration major will be allowed substitutions for certain required courses.

# FOOD, NUTRITION, AND INSTITUTION ADMINISTRATION

## FOOD AND NUTRITION CURRICULUM

	Semester	
	I	II
SOPHOMORE YEAR		
Eng. 3, 4—Composition and World Literature.....	3	3
Chem. 31, 32, 33, 34—Organic Chemistry.....	3	3
Psych. 1—Introduction to Psychology.....	3	(3)
Econ. 37—Fundamentals of Economics or Econ. 31, 32 (6).....	(3)	3
Physical Activities .....	1	1
Select two of the following (6 hrs.).....	3	3
Food 52, 53 (6)—Science of Food Preparation		
F. & N. 5 (3)—Food and Nutr. of Indiv. and Families		
Food 10 (3)—Science Principles of Food		
T. & C. 5 (3)—Tex. and Clo. in Contemporary Living		
Select two of the following (8 hrs.).....	4	4
Zool. 1—General Zoology		
Microb. 1—Gen. Microbiology		
Zool. 14, 15—Human Anatomy and Physiology		
Chem. 161, 163		
Total .....	17	17
JUNIOR YEAR		
Home Mgt. 50—Decision Making in Family Living <sup>1</sup> .....	3	
Home Mgt. 160—Scientific Management in the Home.....		3
Food 150—Food Economics and Meal Management.....		3
Nutr. 121—Science of Nutrition.....	3	
F. & N. 130—Special Problems in Food and Nutrition.....		3
C. Ed. 110—Child Development III or F. L. 132—The Child in the Family.....		3
Hist. 5, 6—History of American Civilization.....	3	3
A.D. 2—Survey of Art History (or Tex. & Clo.) <sup>2</sup> .....	2	
Select at least one of the following:.....	4	(4)
Chem. 161, 163—Biochemistry (2, 2)		
Microb. 1—General Microbiology (4)		
Zool. 1—General Zoology (4)		
Total .....	15	15

<sup>1</sup> Recommended for sophomore year.

<sup>2</sup> Selected with adviser's consent.

## FOOD, NUTRITION, AND INSTITUTION ADMINISTRATION

SENIOR YEAR	Semester	
	I	II
Home Mgt. 161—Resident Experience in Home Mgt. or Home Mgt. 165—Home Mgt. Practicum <sup>1</sup> ....	..	3
Food 152—Advanced Food .....	3	..
Food 153—Experimental Food .....	..	3
H. E. 180—Professional Seminar .....	(2)	2
Select at least two of the following: .....	3	3
H. E. 170—Communication Skills and Techniques in Home Economics		
Nutr. 124—Advanced Nutrition		
Nutr. 125—Therapeutic Nutrition		
Electives (100 level courses).....	7-10	4-7
Total.....	13-16	15-18

## INSTITUTION ADMINISTRATION CURRICULUM

### SOPHOMORE YEAR

Eng. 3, 4—Composition and World Literature.....	3	3
Chem. 31, 32, 33, 34—Organic Chemistry.....	3	3
Food 52, 53—Science of Food Preparation or Food 10—Science Principles of Food.....	(3)	3
Econ. 37—Fundamentals of Economics.....	..	3
A.D. 2—Survey of Art History (or Tex. & Clo.) <sup>2</sup> .....	2	..
Psych. 1—Introduction to Psychology.....	3	..
Microb. 1—General Microbiology .....	..	4
Physical Activities .....	1	1
Electives .....	3	..
Total.....	15-17	17-19

### JUNIOR YEAR

Home Mgt. 50—Decision Making in Family Living <sup>3</sup> .....	3	..
Home Mgt. 160—Scientific Management in the Home.....	..	3
Nutr. 121—Science of Nutrition.....	3	..
I. A. 153—Food Service Organization and Management.....	..	2
Chem. 161, 163—Biochemistry .....	2	2
I. A. 150—Institution Organization and Management.....	3	..
I. A. 151—Institution Purchasing and Accounting.....	..	3
C. Ed. 110—Child Development III or F. L. 132—The Child in the Family.....	..	3
Food 152—Advanced Food .....	3	..
Food 153—Experimental Food .....	..	3
Zool. 1—General Zoology.....	4	..
Total.....	18	16

<sup>1</sup> Consent of Dept. of Family Life and Management.

<sup>2</sup> Selected with adviser's consent.

<sup>3</sup> Recommended for sophomore year.

## FOOD, NUTRITION, AND INSTITUTION ADMINISTRATION

SENIOR YEAR	—Semester—	
	I	II
Hist. 5, 6—History of American Civilization.....	3	3
Home Mgt. 161—Resident Experience in Home Mgt. or Home Mgt. 165—Home Management Practicum <sup>1</sup> ..	(3)	3
Nutr. 124—Advanced Nutrition .....	3	..
I. A. 152—Institution Foods .....	3	..
Psych. 110—Educational Psychology .....	..	3
H. E. 180—Professional Seminar.....	2	..
Electives (100 level courses).....	4-7	6-9
Total.....	15-18	15-18

## TEXTILES AND CLOTHING

The curricula in textiles and clothing are planned to help students be intelligent and responsible consumers; to give them preliminary training for positions in textiles and clothing in business, in textile testing, and research in textiles and clothing.

Men majoring in these curricula will be allowed substitutions for certain required courses and will choose supporting courses according to their particular interests and needs.

## TEXTILE CURRICULUM

SOPHOMORE YEAR	—Semester—	
	I	II
Eng. 3, 4—Composition and World Literature ..	3	3
Clo. 10—Principles and Methods of Clothing Design	(2)	2
Econ. 37—Fundamentals of Economics or Econ. 31, 32—Principles of Economics (6)	3	(3)
Psych. 1—Introduction to Psychology.....	3	(3)
A. D. 20—Costume Design .....	(3)	3
Physical Education .....	1	1
Chem. 1, 3 or 11, 13—General Chemistry.....	3-4	3-4
Clo. 11—Experimental Clothing Design or Clo. 21—Pattern Design ..	(2-3)	2-3
Tex. 55—Elements of Textiles .....	3	3
Total .....	16-17	17-19

<sup>1</sup> Consent of Dept. of Family Life and Management.



## TEXTILES AND CLOTHING

JUNIOR YEAR	Semester	
	I	II
Home Mgt. 50—Decision Making in Family Living <sup>1</sup> .....	3	..
Home Mgt. 160—Scientific Management in the Home .....	..	3
F. & N. 5—Food and Nutrition of Individuals & Families...	3	..
Nutr. 20—Elements of Nutrition or		
Nutr. 121—Science of Nutrition.....	3	(3)
Art Elective .....	..	3
Phys. 1, 2—Elements of Physics.....	3	3
Chem. 31, 32, 33, 34—Organic Chemistry.....	3	3
Math. 10—Introduction to Mathematics .....	..	3
Tex. 150—Advanced Textiles .....	3	..
Tex. 102—Textile Testing .....	..	3
Total .....	18	18
SENIOR YEAR		
Hist. 5, 6—History of American Civilization.....	3	3
Home Mgt. 161—Resident Experience in Home Mgt. or		
Home Mgt. 165—Home Mgt. Practicum <sup>2</sup> .....	..	3
Chemistry <sup>2</sup> .....	..	4
Food 150—Food Economics and Meal Management .....	3	..
B. A. 130—Elements of Business Statistics.....	3	..
Speech <sup>3</sup> .....	..	3
C. Ed. 110—Child Development III or		
F. L. 132—The Child in the Family.....	3	..
H. E. 180—Professional Seminar .....	2	..
Electives .....	2	3
Total.....	16	16

## TEXTILES AND CLOTHING CURRICULUM

SOPHOMORE YEAR		
Eng. 3, 4—Composition and World Literature .....	3	3
Clo. 10—Principles and Methods of Clothing Design.....	(2)	2
Econ. 37—Fundamentals of Economics or		
Econ. 31, 32—Principles of Economics (6).....	3	(3)
Psych. 1—Introduction to Psychology.....	3	(3)
A. D. 20—Costume Design.....	(3)	3
Physical Education .....	1	1
Chem. 11, 13 or 1, 3—General Chemistry or Science elective	3-4	3-4
Clo. 11—Experimental Clothing Design.....	2	(2)
Clo. 21—Pattern Design .....	(3)	3
Tex. 50—Consumer Textiles .....	3	(3)
Total.....	18-19	15-16

<sup>1</sup> Recommended for sophomore year.

<sup>2</sup> Consent of Dept. of Family Life and Management.

<sup>3</sup> Selected with adviser's consent.

## TEXTILES AND CLOTHING

	Semester	
	I	II
<b>JUNIOR YEAR</b>		
Home Mgt. 50—Decision Making in Family Living <sup>1</sup> . . . . .	3	..
Home Mgt. 160—Scientific Management in the Home . . . . .	..	3
Nutr. 20—Elements of Nutrition . . . . .	..	3
Clo. 122—Tailoring . . . . .	2	..
Art <sup>2</sup> . . . . .	3	..
Psychology <sup>2</sup> . . . . .	..	3
Food 150—Food Economics and Meal Management . . . . .	(3)	3
C. Ed. 110—Child Development or F. L. 132—The Child in the Family . . . . .	3	..
Tex. 153—International Textiles . . . . .	..	2
Choice of course in Dept. or H. E. 170—Communication Skills and Techniques in Home Economics <sup>2</sup> . . . . .	..	3
Electives . . . . .	6-8	..
Total . . . . .	16-18	17
<b>SENIOR YEAR</b>		
Hist. 5, 6—History of American Civilization . . . . .	3	3
Home Mgt. 161—Resident Experience in Home Mgt. or Home Mgt. 165—H. Mgt. Practicum <sup>3</sup> . . . . .	3	(3)
Clo. 120—Draping . . . . .	3	..
T. & C. 126—Fundamentals of Fashion . . . . .	..	3
Speech <sup>2</sup> . . . . .	3	(3)
H. E. 180—Professional Seminar . . . . .	2	(2)
Electives . . . . .	2	(2)
Total . . . . .	16	15

## HOME ECONOMICS IN EDUCATIONAL, COMMUNITY, AND FAMILY LIFE AREAS

Students selecting programs of study or major in this area may choose one of the several avenues in preparing for teaching or positions involving person-to-person relationships at different age levels. These study programs provide a broad general education, an understanding of family life in today's world, and preparation for specific positions.

### EDUCATIONAL, COMMUNITY, AND FAMILY LIFE CURRICULA

University Requirements (see page 8)

College of Home Economics requirements (see page 8)

<sup>1</sup> Recommended for sophomore year.

<sup>2</sup> Selected with adviser's consent.

<sup>3</sup> Consent of Dept. of Family Life and Management.

## EXTENSION HOME ECONOMICS CURRICULUM

This curriculum provides preparation for positions in extension home economics. It includes the basic sciences and the technical subjects related to farm, home, and community situations which home demonstration agents encounter. It provides an opportunity to gain insight and understanding into the attitudes and appreciation expected of a professional extension worker.\*

SOPHOMORE YEAR	Semester	
	I	II
Eng. 3, 4—Composition and World Literature.....	3	3
Chem. 31, 32, 33, 34—Organic Chemistry <sup>1</sup> .....	3	3
Choice of (6 hrs.) from		
Food 52, 53—Science of Food Preparation		
F. & N. 5—Food and Nutrition of Individuals		
and Families .....	3	3
Food 10—Science Principles of Food		
Econ. 37—Fundamentals of Economics .....	3	..
Clo. 10—Principles and Methods of Clothing Design.....	2	..
Psych. 1—Introduction to Psychology .....	..	3
Clo. 21—Pattern Design .....	..	3
Physical Activities .....	1	1
Total.....	15	16
JUNIOR YEAR		
Home Mgt. 50—Decision Making in Family Living <sup>2</sup> .....	3	..
Home Mgt. 160—Scientific Management in the Home...	..	3
R. Ed. 160—Agricultural Information Methods.....	2	..
Nutr. 121—Science of Nutrition.....	3	..
Hist. 5, 6—History of American Civilization.....	3	3
Choice of (6 hrs.) from:		
H.D.Ed. 100, 101—Principles of Human Dev. I & II		
F.L. 132—The Child in the Family		
F.L. 135—Directed Experiences with		
Children and Families.....	3	3
Nutr. 124—Advanced Nutrition .....	..	3
R. Ed. 150—Extension Education .....	..	2
Zool. 1—General Zoology .....	4	..
Microb. 1—General Microbiology .....	..	4
Total.....	18	18

\*Experience in the field of home economics extension is encouraged for all students majoring in this curriculum. Such experience should be gained before the completion of the senior year.

<sup>1</sup> Chem. 31, 32, 33, 34 is recommended for students with special interest in and need for food and nutrition.

<sup>2</sup> Recommended for sophomore year.

FAMILY LIFE OR GENERAL

SENIOR YEAR	Semester	
	I	II
Home Mgt. 161—Resident Experience in Home Management or Home Mgt. 165—Home Management Practicum <sup>1</sup>	3	..
H. E. 170—Communication Skills and Techniques in H. E...	..	3
A. D. 2—Survey of Art History	..	2
Soc. 113—The Rural Community	..	3
Art <sup>2</sup>	2-3	..
T. & C. 128—Fundamentals of Home Furnishings	..	3
H. E. Ed. 102—Problems in Teaching Home Economics	3	..
Food 150—Food Economics and Meal Management	3	..
H. E. 180—Professional Seminar	..	2
Electives	4-5	2-4
Total	15-17	15-17

FAMILY LIFE OR GENERAL (FOUNDATION) CURRICULUM

The general (foundation) home economics curriculum is planned to provide students with a good basis for personal development, for education in family living, and for professional opportunities requiring a general knowledge of the various areas of home economics. Electives are adequate for developing a special ability or interest, such as: music, social science, speech, journalism, or education.

SOPHOMORE YEAR	Semester	
	I	II
Eng. 3, 4—Composition and World Literature	3	3
Chem. 31, 32, 33, 34—Organic Chemistry <sup>3</sup>	..	..
Choice of (6 hrs.) from:	3	3
Food 52, 53—Science of Food Preparation	..	..
F. & N. 5—Food and Nutrition of Individuals & Families	..	..
Food 10—Science Principles of Food	..	..
Econ. 37—Fundamentals of Economics	3	..
Microb. 1—General Microbiology	..	4
Clo. 10—Principles and Methods of Clothing Design	2	..
A. D. 20—Costume Design	..	3
Physical Activities	1	1
Electives	3	3
Total	15	17

<sup>1</sup> Consent of Dept. of Family Life and Management.

<sup>2</sup> Selected with consent of adviser.

<sup>3</sup> Chem. 31, 32, 33, 34 recommended as an elective for students with special interest in and need for food and nutrition.



## EDUCATION

JUNIOR YEAR	Semester	
	I	II
Home Mgt. 50—Decision Making in Family Living <sup>1</sup> . . . . .	3	..
Home Mgt. 160—Scientific Management in the Home . . . . .	..	3
Nutr. 121—Science of Nutrition or Nut. 20—Elements of Nutrition . . . . .	3	..
A. D. 2—Survey of Art History . . . . .	2	..
H.A.D. 41—Fundamentals of Interior Design . . . . .	..	3
Clo. 2—Experimental Clothing Design or Clo. 21—Pattern Design . . . . .	..	2-3
Food 150—Food Economics and Meal Management . . . . .	..	3
Zool. 1—General Zoology . . . . .	4	..
Psych. 1—Introduction to Psychology . . . . .	..	3
Electives (100 level courses) . . . . .	4	3
Total . . . . .	16	17-18

### SENIOR YEAR

C. Ed. 110—Child Development III or F. L. 132—The Child in the Family F. L. 135—Directed Experiences with Children and Families . . . . .	3	..
Hist. 5, 6—History of American Civilization . . . . .	3	3
Home Mgt. 161—Resident Experience in Home Management or Home Mgt. 165—Home Management Practicum <sup>1</sup> . . . . .	..	3
H. E. 180—Professional Seminar . . . . .	2	..
H. E. 170—Communication Skills and Techniques in Home Economics <sup>2</sup> . . . . .	..	3
Electives (100 level courses) . . . . .	8	6
Total . . . . .	16	15

## HOME ECONOMICS EDUCATION CURRICULUM

Students electing this curriculum may be registered in the College of Home Economics or in the College of Education.

The home economics education curriculum is designed for students who are preparing to teach home economics (vocational or general) and to support other areas of home economics which require a knowledge of teaching methods. It includes some study of each area of home economics and allied sciences with professional preparation for teaching. A student majoring in this curriculum may qualify for a science minor.

<sup>1</sup> Consent of Dept. of Family Life and Management.

<sup>2</sup> A substitute may be arranged with consent of adviser.

## EDUCATION

	Semester	
	I	II
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Philosophy 1—Intro- duction to Philosophy or Psych. 1—Introduction to Psychology .....	3	..
H. E. 5—Introduction to Family Living through H. E. ....	2	..
F. N. 5—Food and Nutrition of Individuals and Families....	3	..
A. D. 1—Design .....	..	3
Hea. 2, 4—Personal and Community Health (Women).....	2	2
P. E. 2, 4.....	1	1
G. and P. 1—American Government.....	..	3
Sp. 1—Public Speaking.....	..	3
Electives .....	1-2	1-2
Total.....	15-16	16-17
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature.....	3	3
Hist. 5, 6—History of American Civilization.....	3	3
A. D. 20—Costume Design.....	..	3
Tex. and Clo. 5—Textiles and Clothing in Contemporary Liv- ing .....	3	..
Clo. 10—Principles and Methods of Clothing Design..	..	2
Chem. 11, 13 or 1, 3—General Chemistry.....	3-4	3-4
Food 10—Science Principles of Food.....	..	3
P. E. 6, 8.....	1	1
Electives .....	1-2	..
Total.....	14-16	18-19
<b>JUNIOR YEAR</b>		
H. E. Ed. 140—Curriculum, Instruction and Observation....	3	..
Ed. 110—Human Development and Learning.....	6	..
H. Mgt. 50—Decision-making in Family Living.....	3	..
Food 150—Food Economics and Meal Management.....	..	3
H. Mgt. 160—Scientific Management in the Home.....	..	3
Nutr. 20—Elements of Nutrition or Nutr. 121—Science of Nutrition.....	..	3
Clo. 11—Experimental Clothing Design.....	2	..
Econ. 37—Fundamentals of Economics.....	..	3
Zool. 1—General Zoology.....	4	..
Bot. 1—General Botany***.....	..	4
Total.....	18	16

\*\* H. E. 180—Professional Seminar (required of seniors in College of Home Economics.) (2)

\*\*\* Chem. 31, 32, 33, 34 recommended in lieu of Botany for students with special interest in and need for food and nutrition.

## HOUSING AND APPLIED (ART) DESIGN

SENIOR YEAR*	Semester	
	I	II
H. Ed. 102—Problems in Teaching Home Economics.....	3	..
Ed. 145—Principles and Methods of Secondary Education..	3	..
H. E. Ed. 148—Teaching Secondary Vocational Home Economics .....	8	..
H. Mgt. 161—Resident Experience in Home Management or H. Mgt. 165—Home Management Practicum..	3	..
A. D. 2—Survey of Art History or T. & C. 128—Fundamentals of Home Furnishing..	..	2-3
Microb. 1—General Microbiology .....	..	4
Ed. 111—Foundations of Education.....	..	3
Electives .....	..	7-9
Total.....	17	16-19

## HOME ECONOMICS IN APPLIED ART AREAS

The fundamental purposes of programs of study in these areas are to provide a broad general education, and instruction in the design and use of materials for the individual, the home, and the community. The commercial field offers graduates positions in designing interiors, fashions, advertising, home furnishings, and technical materials. Positions available also include promotion, selling or buying of wearing apparel and home furnishings.

## HOUSING AND APPLIED (ART) DESIGN

This curriculum permits a choice of three areas of concentration: Applied (Art) Design in advertising, interiors, and costume.

SOPHOMORE YEAR	Semester	
	I	II
Eng. 3, 4—Composition and World Literature.....	3	3
Econ. 37—Fundamentals of Economics.....	3	..
Psych. 1—Introduction to Psychology.....	3	..
F. & N. 5—Food and Nutrition of Individuals and Families .....	..	3
A. D. 20—Costume Design.....	3	(3)
A. D. 21—Action Drawing.....	..	2
A. D. 30—Typography and Lettering.....	3	..
H.A.D. 41—Fundamentals of Interior Design.....	(3)	3
Physical Activities .....	1	1
Laboratory Science <sup>1</sup> .....	..	4
Total.....	16	16

<sup>1</sup> Selected with consent of adviser.

\*Subjects in the block are so arranged that the two semesters may be interchanged.

HOUSING AND APPLIED (ART) DESIGN

	Semester	
	I	II
JUNIOR YEAR		
Home Mgt. 50—Decision Making in Family Living.....	3	..
Home Mgt. 160—Scientific Management in the Home....	..	3
Food 150—Food Economics and Meal Management.....	3	..
Nutr. 20—Elements of Nutrition.....	..	3
A. D. 120, 121—Costume Illustration or H.A.D. 142, 143—Advanced Interior Design..	2	2
Choice of one of the following groups:.....	3	3
Advertising; Crafts (2) A. D. 4—3-Dimensional Design (2) A. D. 3—Silk Screen Printing (2)		
Costume    Clo. 120—Draping (3) Tex. <sup>2</sup> (3)		
Interior    Tex. <sup>2</sup> (3) T & C 128—Fundamentals of Home Furnishings.....(3)		
B. A. 159—Marketing Principles and Organizations *.....	3	..
B. A. 154—Retail Store Management *.....	..	3
A. D. 38—Photography *.....	..	2
Electives .....	3	..
Total.....	17	16
SENIOR YEAR		
Hist. 5, 6—History of American Civilization.....	3	3
Home Mgt. 161—Resident Experience in Home Mgt. or Home Mgt. 165—Home Mgt. Practicum <sup>1</sup>	(3)	3
C. Ed. 110—Child Development III or F. L. 132—The Child in the Family.....	(3)	3
Speech 115—Radio in Retailing *.....	..	3
A. D. 132—Advertising Layout .....	2	(2)
A. D. 136—Display .....	2	(2)
Individual Problems in Advertising, Costume or Interior....	2	2
H. E. 180—Professional Seminar.....	2	..
Electives * .....	2-4	2-4
Total.....	16-18	16-18

\* Women students desiring a non-business program may substitute one of the following blocks of 14-18 credits:

I	II	III	IV
12 hrs. French, Spanish, German	12 hrs. language Journ. 10, 11	12 hrs. language Art 5	12 hrs. language Soc. 5
Soc. 5	Journ. 165	Art 104	Hist. 51, 52
Eng. 12		Art 113	Art 9, 11
Eng. 170			
Sp. 117			

<sup>1</sup> Consent of Dept. of Family Life and Management.

<sup>2</sup> Selected with consent of adviser.



*Modifications of Applied (Art) Design and Crafts Curriculum for Men*

Requirements are the same as for women with the following exceptions:

*Additions:*

Air Science—A. S. 2, 3

Additional courses selected in consultation with adviser

Choice of 3 of the following *college requirements*: (See page 8)

H. E. 5—Introduction to Family Living through Home Economics

A. D. 1—Design

F & N 5—Food and Nutrition of Individuals and Families

T & C 5—Textiles and Clothing in Contemporary Living

H. M. 50—Decision Making in Family Living

H. E. 180—Professional Seminar

*Omissions:*

Food 150; Home Mgt. 160, 161; Health 2, 4; Nutr. 20.

## CRAFTS CURRICULUM

This curriculum provides for a choice of two vocational areas: Pre-occupational therapy and teaching.

SOPHOMORE YEAR	Semester	
	I	II
Eng. 3, 4—Composition and World Literature . . . . .	3	3
F & N 5—Food and Nutrition of Individuals and Families . . . . .	3	..
Econ. 37—Fundamentals of Economics . . . . .	3	..
Psych. 1—Introduction to Psychology . . . . .	..	3
A. D. 3—Silk Screen Printing . . . . .	..	2
A. D. 4—3-Dimensional Design . . . . .	2	..
Cr. 2—Simple Crafts . . . . .	2	..
Cr. 20, 21—Ceramics . . . . .	2	2
Laboratory Science* . . . . .	..	4
Physical Activities . . . . .	1	1
Electives . . . . .	..	3
Total . . . . .	16	18

\* Selected with adviser's consent.

## CRAFTS

JUNIOR YEAR	Semester	
	I	II
Hist. 5, 6—History of American Civilization.....	3	3
H. M. 50—Decision Making in Family Living.....	3	..
H. M. 160—Scientific Management in the Home.....	..	3
Nutr. 20—Elements of Nutrition.....	..	3
Cr. 30, 31—Metalry .....	2	2
Cr. 40, 41—Weaving .....	2	2
Ind. Ed. 2—Woodworking I.....	..	3
Ind. Ed. 9—Industrial Arts in the Elementary School I.....	2	..
Electives <sup>2</sup> (100 level courses).....	4	2
	16	18
SENIOR YEAR	Semester	
	I	II
A. D. 38—Photography .....	2	..
Cr. 5—Puppetry .....	..	3
Advanced crafts .....	4	2
Electives <sup>2</sup> .....	7	9
	13	14

(See modification for men students (page 21))

(Note: For other curricula in art, see offerings in the Colleges of Arts and Sciences and Education)

<sup>1</sup> Recommended for sophomore year.

<sup>2</sup> One of the two following blocks of courses will be completed to meet graduation requirements.

### *I—Pre-Occupational Therapy*

Zool. 1—General Zoology (4)  
 Zool. 14, 15—Human Anatomy & Physiology (4)  
 Phys. 1—Elements of Physics (3)  
 P. E. 100—Scientific Bases of Movement (3)  
 Art 7—Landscape Painting (3)

### *II—Teaching*

Ed. 110—Human Development and Learning (6)  
 Ed. 130—The Junior High School (3)  
 Ed. 140—Curr., Instruction and Observation (3)  
 Ed. 145—Prin. of High School Teaching (3)  
 Ed. 148—Student Teaching (8)

# COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students to warrant giving the course have registered. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: Courses for undergraduates.

100 to 199: Courses for advanced undergraduates and graduates.  
(Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: Courses for graduates only.

399: Graduate research.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of credit hours is shown by the Arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules shortly before they register.

## FOOD, NUTRITION, AND INSTITUTION ADMINISTRATION

*Associate Professors:* BRAUCHER, BROWN.

*Assistant Professors:* BANGS, COLLINS, EHEART.

*Instructors:* LANZ, MCKINLEY.

### FOOD

#### F. & N. 5. FOOD AND NUTRITION OF INDIVIDUALS AND FAMILIES. (3)

First and second semesters. Two lectures and one two-hour laboratory period a week. Consent of instructor. Laboratory fee, \$3.00. A study of food in contemporary living. The economic, social and esthetic implications of food as well as its nutritive value. Selection and use of food in relation to eating habits, health, and well-being of the individual. Survey of meal preparation and service applied to family situations.

## FOOD, NUTRITION, AND INSTITUTION ADMINISTRATION

### FOOD 10. SCIENCE PRINCIPLES OF FOOD. (3)

First and second semesters. Two lectures and one two-hour laboratory period a week. Laboratory fee, \$10.00. Prerequisite or concurrent, Chem. 11, 13. Study of basic scientific principles as applied to food preparation processes.

### FOOD 52, 53. SCIENCE OF FOOD PREPARATION. (3, 3)

First and second semesters. One lecture and two laboratory periods a week. Prerequisites, Chem. 31, 32, 33, 34 to precede or parallel. Laboratory fee, \$10.00. Composition and structure of food with study of the fundamental principles involved in food preparation.

## NUTRITION

(See F. & N. 5)

### NUTR. 20. ELEMENTS OF NUTRITION. (3)

First and second semesters. Laboratory fee, \$3.00. For students in other colleges and for majors in crafts, applied art and textiles and clothing.

*For Advanced Undergraduates and Graduates*

## FOOD

### F. & N. 130. SPECIAL PROBLEMS IN FOOD AND/OR NUTRITION. (1-3)

First and second semesters. Prerequisites, F. & N. 5, Food 10, and consent of instructor. Problem may be in any one of several areas of food and nutrition and will carry the name of the basic area; e. g., child nutrition, adolescent nutrition.

### FOOD 150. FOOD ECONOMICS AND MEAL MANAGEMENT. (3)

First and second semesters. Two lectures and one two-hour laboratory period a week. Consent of department. Laboratory fee, \$10.00. Distribution and marketing of the food supply; food costs; legal measures for consumer protection; retail selection of food commodities in relation to levels of spending; management of family meals through organization of equipment and appointments; time, energy, and money management for effective family living.

### FOOD 152, 153. ADVANCED AND EXPERIMENTAL FOOD. (3, 3)

First and second semesters. One lecture and two two-hour laboratory periods a week. Prerequisites, F. & N. 5; Chem. 31, 32, 33, 34, or equivalent. Physical and chemical properties of food as related to modern theories of food processing; study of recent advances in the field; recipe development and group and laboratory experimentation as an introduction to methods of research.

## NUTRITION

### NUTR. 121. SCIENCE OF NUTRITION. (3)

First semester. Prerequisites, Chem. 11, 13 or 1, 3, or consent of department. Two lectures and one two-hour laboratory period a week. An understanding of the chemical and physiological utilization of nutrients present in the various foods as related to individual human nutritional status, with studies in applied nutrition. Laboratory fee, \$3.00.



## FOOD, NUTRITION, AND INSTITUTION MANAGEMENT

### NUTR. 114. NUTRITION FOR HEALTH SERVICES. (3)

First and second semester. Prerequisite, Nutr. 20, Chem. 11, 13 or 1, 3 or equivalent. Laboratory fee, \$3.00. A study of nutritional status and the effect of food habits and food consumption on family health. Nutritional requirements for individuals in different stages of development. Techniques and procedures for the application of nutrition knowledge with consideration of various economic levels and social backgrounds. For graduate nurses, dietitians, health teachers, and social workers.

### NUTR. 124. ADVANCED NUTRITION. (3)

First semester. Prerequisites, Consent of department; Zool. 1; Chem. 161, 163 or concurrent. Laboratory fee, \$10.00. Two lectures and one two-hour laboratory. The progress of nutrition as found in the results of current research, with emphasis on interpretation and application.

### NUTR. 125. THERAPEUTIC NUTRITION. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, Nutr. 121, 124. Laboratory fee, \$3.00. Modifications of the normal adequate diet to meet human nutritional needs in pathological conditions.

### *For Graduates*

### FOOD \*

### FOOD 200. ADVANCED EXPERIMENTAL FOOD. (3-5)

Second semester. Two lectures and three laboratory periods a week. Laboratory fee, \$10.00. Selected readings of literature in experimental foods. Development of individual problem.

### FOOD 204. RECENT TRENDS IN FOOD. (2-3)

First semester. Recent trends in the preparation, processing, and marketing of foods.

### FOOD 210. READINGS IN FOOD. (3)

First or second semester. Prerequisites, Food 152, 153. A critical survey of the literature of recent developments in food research.

### FOOD 220. SEMINAR. (1-2)

First and second semesters. Reports and discussions of current research in foods.

### FOOD 399. RESEARCH. (6)

First and second semesters. Credit in proportion to work done and results accomplished. Investigation in some phases of food which may form the basis for a thesis.

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\*Prerequisite for all 200 courses in Food and Nutrition, consent of department.

## FOOD, NUTRITION, AND INSTITUTION MANAGEMENT

### NUTRITION \*

#### NUTR. 204. RECENT ADVANCES IN NUTRITION. (2-3)

First and second semester. Factors that affect the nutritive value of food during production, cookery processes, holding practices, processing, packaging, and storage.

#### NUTR. 208. RECENT PROGRESS IN HUMAN NUTRITION. (3)

Second semester. Recent developments in the science of nutrition with emphasis on the interpretation of these findings for application in health and disease. Aids for the dietitian in creating a better understanding of nutrition among patients, students of graduate status and personnel, such as those in the dental and medical professions.

#### NUTR. 210. READINGS IN NUTRITION. (3)

First and second semesters. Reports and discussions of significant nutritional research and investigation.

#### NUTR. 211. PROBLEMS IN NUTRITION. (3-5)

Second semester. Experience in a phase of nutrition research which is of interest to the student. Use of experimental animals, human studies and extensive and critical study of research methods, techniques or data of specific projects.

#### NUTR. 212. NUTRITION FOR COMMUNITY SERVICES. (3)

First semester. Application of the principles of nutrition to various community problems of specific groups of the public. Students may select specific problems for independent study.

#### NUTR. 220. SEMINAR. (1)

First and second semesters. Reports and discussions of current research in nutrition.

#### NUTR. 399. RESEARCH. (6)

First and second semesters. Credit in proportion to work done and results accomplished. Investigation in some phase of nutrition which may form the basis of a thesis.

*For Advanced Undergraduates and Graduates*

## INSTITUTION ADMINISTRATION

### I. A. 150. INSTITUTION ORGANIZATION AND MANAGEMENT. (3)

First semester. Prerequisite, F. & N. 5. Planning of functional kitchens for institutions and commercial food services. Equipment selection, maintenance, and layout. Field experiences and observations in a variety of situations.

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\*Prerequisites for all 200 courses in Food and Nutrition, consent of department.

## FOOD, NUTRITION, AND INSTITUTION MANAGEMENT

### I. A. 151. INSTITUTION FOOD PURCHASING AND COST CONTROL. (3)

First and second semesters. Prerequisite, Food 10; Nutr. 20 or equivalent. Selection of food, methods and units of purchase in large quantities. Budgets, food cost accounting and control. Field experiences.

### I. A. 152. INSTITUTION FOODS. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisites, Food 10; Nutr. 20 or 121; or consent of instructor. Laboratory fee, \$10.00. Application of basic principles and procedures of food preparation to quantity food preparation. Standardizing recipes; menu planning for various types of food services; determination of food costs.

### I. A. 153. FOOD SERVICE ORGANIZATION AND MANAGEMENT. (2)

Second semester. Prerequisite, consent of instructor. Application of principles of scientific management to the organization of food services. Efficient personnel management with emphasis on training and supervision of employees.

### I. A. 154. SCHOOL FOOD SERVICE. (3)

First semester. Two lectures and one morning a week for field experience in a school food service. Prerequisites, Food 10 and Nutr. 20 or 121, or consent of instructor. Not open to Institution Administration majors. Study of organization, management, menu planning, food purchasing and preparation, and cost control, for serving the noon meal in schools and child care centers.

### I. A. S166. NUTRITION AND MEAL PLANNING. (2)

Summer only. Special application to group food services: school lunches, restaurants, and hospitals.

### I. A. S168. COST ACCOUNTING FOR SCHOOL FOOD SERVICE. (2)

Summer session. Food cost accounting systems for school lunch programs: programs and procedures of accumulating, recording, and interpreting data for cost control.

### I. A S169. FOOD PURCHASING FOR SCHOOL FOOD SERVICE. (3)

Summer session. Purchasing procedures; grading, processing, and packing of food; selection of food, specifications, and marketing regulations.

### *For Graduates*

### I. A. 200. FOOD SERVICE ADMINISTRATION AND SUPERVISION. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, I. A. 152, and 154 or equivalent. Supervision and administrative policies; personnel management with emphasis on human relations, and philosophy underlying management practices.

## TEXTILES AND CLOTHING

## TEXTILES AND CLOTHING

*Professor:* MITCHELL.

*Assistant Professors:* HEAGNEY, WILBUR.

*Instructor:* YOUNG.

*Lecturer:* KREINIK.

### T. & C. 5. TEXTILES AND CLOTHING IN CONTEMPORARY LIVING. (3)

First and second semesters. Laboratory fee, \$5.00. Three lecture-discussion periods a week. Comparative analysis of the significance of fashions and fabrics to individuals and groups, in terms of their physical, psychological, and social needs. Application of current technology to the choice and use of apparel and home furnishing textiles toward increasing satisfactions in changing modes of living.

### *For Advanced Undergraduates and Graduates*

### T. & C. 101. FASHION PROMOTION AND COORDINATION. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, T. & C. 126; Speech 115 or 117. Laboratory fee, \$3.00. Analysis of fashion media; industry publications, magazines, newspapers, radio, TV; merchandise displays and fashion shows. Role of the stylist.

### T. & C. 110. FIELD EXPERIENCE IN TEXTILES AND CLOTHING. (3)

First semester or summer school. Prerequisite, senior standing in department. Supervised and coordinated training-work program in cooperation with agencies and organizations.

### T. & C. 126. FUNDAMENTALS OF FASHION. (3)

Second semester. Prerequisite, Clo. 120. Laboratory fee, \$3.00. Fashion history; current fashions, how to interpret and evaluate them; fashion show techniques; fashion promotion. The course includes oral and written reports, group projects, panel discussions and field trips.

### T. & C. 128. FUNDAMENTALS OF HOME FURNISHINGS. (3)

First and second semesters. Three laboratory periods a week. Prerequisites, T. & C. 5, Clo. 10, or consent of instructor. Laboratory fee, \$3.00. Selection of fabrics for home and institutional furnishings; care and repair of such furnishings; custom construction of slip covers, draperies, bedspreads; refinishing and upholstering furniture.

## TEXTILES

### TEX. 50. CONSUMER TEXTILES. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, T. & C. 5 or consent of instructor. Laboratory fee, \$3.00. (Cannot be used as



## TEXTILES AND CLOTHING

prerequisite for Tex. 150.) Problems of the consumer in textile selection, purchase, and care as related to service and esthetic features of fibres, yarns, and fabric construction and finish.

### TEX. 55. ELEMENTS OF TEXTILES. (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, T. & C. 5, Chem. 11, 13 or 1, 3. Laboratory fee, \$3.00. Intensive study of the physical and chemical properties of fibers, of yarn and fabric construction, of color and design application, and of finishing. Evaluation of sources of consumer information on legislation protecting textile consumers. Economic factors affecting textile consumption.

### *For Advanced Undergraduates and Graduates*

### TEX. 102. TEXTILE TESTING. (3)

Second semester. Three laboratory periods a week. Prerequisite, Tex. 150. Laboratory fee, \$3.00. The theory of textile testing methods, the repeated use of physical and chemical testing, interpretation of the data, and presentation of the findings.

### TEX. 150. ADVANCED TEXTILES. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Tex. 55. Laboratory fee, \$3.00. An intensive study of textiles from the fiber to the finished fabric, from the producer to the consumer. Analysis of fabric construction and serviceability features.

### TEX. 153. INTERNATIONAL TEXTILES. (2)

First semester. Two lectures a week. Laboratory fee, \$3.00. Prerequisite, T. & C. 5 or consent of instructor. Study of historic and contemporary fibers and laces with analysis of designs and techniques of decorating fabrics; relationship of textiles to the esthetic and developmental cultures of society.

## CLOTHING

### CLO. 10. PRINCIPLES AND METHODS OF CLOTHING DESIGN. (2)

First and second semesters. Two lecture periods a week. Laboratory fee, \$10.00. Basic construction and fitting techniques of apparel demonstrated in relation to interpretation and use of commercial patterns. Esthetic and economic aspects as interrelated.

### CLO. 11. EXPERIMENTAL CLOTHING DESIGN (2)

First and second semesters. Two laboratory periods a week. Prerequisite, Clo. 10 or concurrent registration. Laboratory fee, \$3.00. Application of principles and methods of clothing construction with emphasis on management and analysis of values to be achieved.

### CLO. 21. PATTERN DESIGN. (3)

First and second semesters. Three two-hour laboratory periods a week. Prerequisites, Clo. 10 and consent of department. Laboratory fee, \$3.00. Pattern study, figure analysis and pattern alteration, development and adaptation of individual basic pattern, creation of original designs.

## TEXTILES AND CLOTHING

### *For Advanced Undergraduates and Graduates*

#### CLO. 100. FAMILY CLOTHING. (3)

First semester in alternate years. One lecture and two laboratory periods a week. Prerequisites, T. & C. 5; Clo. 10, 11; or equivalent. Laboratory fee, \$3.00. Clothing the family; analysis of needs of family members in various stages of the life cycle; individual and family budgets; problems in selection and/or construction of wardrobe items.

#### CLO. 120. DRAPING. (3)

First semester. Two laboratory periods a week. Prerequisite, Clo. 10. Laboratory fee, \$3.00. Demonstrations and practice in creating costumes in fabrics and on individual dress forms; modeling of garments for class criticism.

#### CLO. 122. TAILORING. (2)

First and second semesters. Two laboratory periods a week. Prerequisite, Clo. 21. Laboratory fee, \$3.00. Construction of tailored garments requiring professional skill.

#### CLO. 127. APPAREL DESIGN. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, Clo. 120. Laboratory fee, \$3.00. The art of costuming; trade and custom methods of clothing design and construction; advanced work in draping, pattern design and/or tailoring, with study of the interrelationship of these techniques.

### *For Graduates*

#### TEX. 200. SPECIAL STUDIES IN TEXTILES. (2-4)

First or second semester. Summer session. Laboratory fee, \$3.00. Advanced inquiry into uses, care, types and/or performance of textile materials, either contemporary or historic depending on interest of students; compilation of data through testing, surveys, museum visits and/or field trips; writing of technical reports.

#### CLO. 220. SPECIAL STUDIES IN CLOTHING. (2-4)

First and second semester. Laboratory fee, \$3.00. Special areas of clothing are selected according to interest of student; consumer, design, functional aspects, and/or evaluation and analysis studies are made of those areas. Reports may be written, oral, or by group presentation.

#### T. & C. 230. SEMINAR. (1)

First and second semesters. Laboratory fee, \$3.00. The breadth and limit of the field of textiles and clothing are investigated; annotated bibliography is developed; one oral report is presented.

#### T. & C. 232. ECONOMICS OF TEXTILES AND CLOTHING. (3)

Second semester. Laboratory fee, \$3.00. Study of interrelationship of developments in production, distribution and consumption of textiles and clothing affecting consumers and the market. Analysis of consumption trends as related to patterns of family living and population changes.

## HOME ECONOMICS EDUCATION

### T. & C. 233. SYNTHESSES OF BEHAVIORAL SCIENCE CONCEPTS IN TEXTILES AND CLOTHING. (3)

Second semester. Prerequisites, Psych. 21 and/or consent of department. Analysis and interpretation of interdisciplinary research methods and findings with reference to behavioral aspects of textiles and clothing. Consideration given to measurement and relation of clothing interest and behavior to attitudes, values, roles, and social status groupings.

### T. & C. 399. RESEARCH. (1-6)

First and second semesters. Laboratory fee, \$3.00. A research problem is selected by the student; thesis for partial fulfillment of the Master of Science degree is written.

## HOME ECONOMICS EDUCATION \*

### H. E. ED. 102. PROBLEMS IN TEACHING HOME ECONOMICS. (3)

First and second semesters. Prerequisite, H. E. Ed. 140. A study of the managerial aspects of teaching and administering a homemaking program; the physical environment, organization and sequence of instructional units; resource materials; evaluation; home projects.

### H. E. ED. 120. EVALUATION OF HOME ECONOMICS. (3)

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction and use.

### H. E. ED. 140. CURRICULUM, INSTRUCTION, AND OBSERVATION. (3)

The place and function of home economics education in the secondary school curriculum. Philosophy of education for home and family living; characteristics of adolescence, construction of source units, lesson plans, and evaluation devices; directed observations in junior and senior high school home economics departments.

### H. E. ED. 148. TEACHING VOCATIONAL HOME ECONOMICS IN THE SECONDARY SCHOOLS. (8)

First and second semesters. Prerequisite, H. E. Ed. 140 and 102 parallel. See Ed. 148 for additional requirements. Fee, \$24 for students who do not pay the regular instructional materials fee. Observation and supervised teaching in approved secondary school home economics departments in Maryland and the District of Columbia.

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\*For further information see College of Education catalog.

## HOME ECONOMICS EDUCATION

### *For Graduates*

H. E. ED. 200 SEMINAR IN HOME ECONOMICS EDUCATION. (2)

H. E. ED. 202. TRENDS IN THE TEACHING AND SUPERVISION OF HOME ECONOMICS. (2-4)

Study of home economics programs and practices in light of current educational trends. Interpretation and analysis of democratic teaching procedures, outcomes of instruction, and supervisory practices.

## GENERAL HOME ECONOMICS

*Professor:* LIPPEATT.

*Associate Professor:* WILSON.

*Instructor:* GARRISON

*Lecturer:* KINCAID.

H. E. 5. INTRODUCTION TO FAMILY LIVING THROUGH HOME ECONOMICS. (2)

First and second semesters. Responsibilities of the home economist to examine and understand interrelations of the individual and his family through the various stages of the family life cycle; underlying principles of guidance of children as applied to home situations; and scope of professional field of home economics in service to homes and families.

H. E. 10. SOCIAL USAGE. (1)

First and second semesters. One lecture and one-hour laboratory. Laboratory fee \$1.00. Analysis of social usage in furthering effective relationships at home and abroad.

### *For Advanced Undergraduates and Graduates*

H. E. 170. COMMUNICATION SKILLS AND TECHNIQUES IN HOME ECONOMICS. (3)

First and second semesters. Laboratory fee, \$10.00. Principles and techniques for professional demonstration and presentation of home economics and its related areas with selected experiences in television, radio, creative writing, and photography.

H. E. 180. PROFESSIONAL SEMINAR. (2)

First and second semesters. Clarification of perceptions of one's job and the situation in which one operates; attainment of professional breadth and depth; establishment of reasonable levels of aspiration—recognized to be requisites for a successful career in home economics and related areas. (For seniors in College of Home Economics.)



## FAMILY LIFE AND MANAGEMENT

### H. E. 190. SPECIAL PROBLEMS IN HOME ECONOMICS. (1-3)

First and second semesters. Consent of instructor. Laboratory fee, \$3.00 a semester hour. Problem may be in any area of home economics and will carry the name of the subject matter of the problem. a. Applied (Art) Design; b. Clothing; c. General Home Economics; d. Family Life; e. Food and Institutional Food; f. Management; g. Nutrition; h. Textiles.

#### *For Graduates*

### H. E. 201. METHODS OF RESEARCH IN HOME ECONOMICS. (3)

First and second semesters. Prerequisite, Statistics or Tests and Measurements. Application of scientific methods to problems in the field of home economics with emphasis on needed research of an inter-disciplinary nature.

### H. E. 202. INTEGRATIVE ASPECTS OF HOME ECONOMICS. (2)

First and second semesters. Prerequisite, consent of instructor. Scope and focus of total professional field with emphasis on purpose and functions as related to family and other group living. Impact of the changing social, economic, technological and educational situation upon home economies.

### H. E. 290. SPECIAL TOPICS. (1-6)

First and second semesters. Summer session. Concentrated study in areas of home economics, such as: consumer problems; housing, interior design and home furnishings; institution administration and food service. a. Applied (Art) Design; b. Clothing; c. General Home Economics; d. Family Life; e. Food and Institutional Food; f. Management; g. Nutrition; h. Textiles.

### H. E. 399. THESIS RESEARCH. (1-6)

First and second semesters. Summer session. Credit according to work accomplished.

## FAMILY LIFE AND MANAGEMENT

*Assistant Professor:* ORVEDAL.

*Instructor:* SUTTON.

*Lecturer:* BRITTON, KINCAID

## FAMILY LIFE

#### *For Advanced Undergraduates and Graduates*

### F. L. 130. HOME MANAGEMENT AND FAMILY LIFE. (3)

First semester. Prerequisites, Psych. 1; H. M. 50; H. E. 5. Study of factors influencing establishment and maintenance of satisfying interpersonal relations throughout the family life cycle as affected by management in the home.

## FAMILY LIFE AND MANAGEMENT

### F. L. 132. THE CHILD IN THE FAMILY. (3)

Second semester. Three lectures. Prerequisite, Psych. 1; H. E. 5 or equivalent. Study of the child from prenatal stage through adolescence, with emphasis on responsibility for guidance in the home. Biological and psychological needs as they affect the child's relationship with his family and peers.

### F. L. 135. DIRECTED EXPERIENCES WITH CHILDREN AND FAMILIES. (3)

First and second semesters. Laboratory fee, \$3.00. Prerequisites, Psych. 1 and consent of department. Observation and study of selected home situations placing emphasis on contemporary family living. This course is designed especially for students who wish an understanding of children of various ages in relation to the family and the quality of living achieved in a variety of life situations. (Limited to majors in the College of Home Economics.)

## HOME MANAGEMENT

### H. M. 50. DECISION MAKING IN FAMILY LIVING. (3)

First and second semesters. Consent of department. (Designed for second, third, or fourth semester students.) Decision making in relation to family values, philosophies, goals, and resources, and general socio-economic conditions.

### H. M. 80. FUNDAMENTALS OF HOUSEHOLD EQUIPMENT. (2)

First semester. Laboratory fee, \$3.00. Two lectures and one two-hour laboratory period a week. Prerequisite, consent of department. Principles basic to selection, use, and care of household equipment and appliances. Application to equipment used for refrigeration, food preparation, laundering, cleaning, and household wiring. Focus on management in relation to the family's equipment.

### *For Advanced Undergraduates and Graduates*

### H. M. 140. FUNDAMENTALS OF HOUSING. (3)

Second semester. Two lectures and one two-hour laboratory a week. Prerequisite, H. M. 50. Laboratory fee, \$3.00. Sociological, psychological and economic aspects of housing. Relationship of the house and the family living within.

### H. M. 160. SCIENTIFIC MANAGEMENT IN THE HOME. (3)

First and second semesters. Two lectures and one two-hour laboratory period a week. Prerequisite, H. M. 50 or equivalent. Laboratory fee, \$3.00. The philosophy and application of principles of scientific management in the home through the use of resources; management of time, energy, and money; work simplification.

### H. M. 161. RESIDENT EXPERIENCE IN HOME MANAGEMENT. (3)\*

First and second semesters. Prerequisites, H. M. 50, 160; Food 150; or equivalent. Laboratory fee, \$10.00. Residence from five to nine weeks in the home management center. Experience in planning, coordinating, and participating in the activities of a household, composed of a faculty member, a group of students, and possibly an infant on a part-time basis. Students not living in

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\*Reservations for the Home Management Center should be made at registration for the 5th or 6th semester. Forms may be obtained from the advisers.

## HOUSING, APPLIED DESIGN, AND CRAFTS

dormitories are billed at the rate of \$5.00 a week for a room in the Home Management Center. A charge of \$40.00 for food and supplies is assessed each student. Dormitory residents will be refunded a prorated amount for meals.

### H. M. 162. PERSONAL AND FAMILY FINANCE. (2)

First semester. Prerequisite, H. M. 50. Study of factors influencing use of money; how families attempt to achieve financial security; interrelationship of money and other resources; types of credit. Emphasis on management of the family's money.

### H. M. 165. HOME MANAGEMENT PRACTICUM. (3)

First and second semesters. Prerequisites, H. M. 50, 160; Food 150; or equivalent; consent of department. Laboratory fee, \$3.00. Home management experience under supervision in a variety of situations. Designed especially for students who are managing their own homes.

## HOUSING, APPLIED DESIGN AND CRAFTS

*Professor:* CURTISS.

*Assistant Professors:* BECKWITH, ROPER.

*Instructor:* ODLAND.

*Lecturers:* DAVIS, LEWIS, NISONGER.

A. D. 1, Design, must be taken prior to or concurrently with any other course offered by the Department.

The Department reserves the right to retain for illustrative purposes one art problem from each student in each class.

## HOUSING AND APPLIED (ART) DESIGN

### A. D. 1. DESIGN. (3)

First and second semesters. Fee, \$3.00. Art expression through materials such as opaque water color, wet clay, colored chalk, and lithograph crayon which are conducive to freeing techniques. Elementary lettering, action figures, abstract design, three-dimensional design and general composition study. Consideration of art as applied to daily living.

### A. D. 2. SURVEY OF ART HISTORY. (2)

First and second semesters. Fee, \$3.00. A rapid survey of art, from prehistoric times to the twentieth century, showing the great human movements and art ideals which each period has reflected. Emphasis is given to residential architecture, furniture, accessories and costume and to the philosophy and significance of art in today's living.

## HOUSING, APPLIED DESIGN, AND CRAFTS

### A. D. 3. SILK SCREEN PRINTING. (2)

First and second semesters. Three laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Original design using the silk screen process for brochure covers, book jackets, greeting cards, posters, salon prints, and decorative textiles.

### A. D. 4. THREE-DIMENSIONAL DESIGN. (2)

First semester. Two laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Abstract design emphasizing form, volume, depth and movement. Exploratory use of materials to stimulate resourcefulness, imagination, and distinctive style.

### A. D. 20. COSTUME DESIGN. (3)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, 2. Fee, \$3.00. Clothing selection and designing in relation to personality, coloring, figure, changing fashions, and occasion. Original design rendered in transparent and opaque water color, soft pencil, chalk and India ink. A minimum of basic fashion figure drawing. Survey of the fashion industry, contemporary style, and historic costume.

### A. D. 21, 22. ACTION DRAWING. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Study of the human figure with emphasis upon action, proportion, and balance. Development of techniques in soft pencil, lithograph pencil, chalk, transparent water color, and India ink.

### A. D. 23. HISTORY OF COSTUME. (2)

First and second semesters. Two lectures. A historical costume survey and intensive study of fashion cycles. Emphasis on styles adapted to contemporary period.

### A. D. 30. TYPOGRAPHY AND LETTERING. (3)

First and second semesters. Three laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Practice in hand lettering and recognition of type faces with application to layouts for advertisements, books and magazines. Elementary knowledge of printing processes including an understanding of type sizes and weights, leading, and copy fitting. Readings.

### A. D. 38, 39. PHOTOGRAPHY. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Experimental effects with emphasis upon design in photography for advertising, display, periodicals, scientific recording and teaching. It is advisable for each student to have his own camera.

### H.A.D. 40. PROFESSIONAL ASPECTS OF INTERIOR DESIGN. (1)

One lecture period a week. Professional orientation to the field of interior design.

### H.A.D. 41. FUNDAMENTALS OF INTERIOR DESIGN. (3)

First and second semesters. One lecture and three laboratory periods a week. Prerequisites, A. D. 1 and 2. Fee, \$3.00. Analysis of interiors as backgrounds for various personalities. Study of good and poor interiors. Original floor plans and wall elevations drawn to scale, rendered in color and coordinated with fabrics. Consideration of family living.



## HOUSING, APPLIED DESIGN, AND CRAFTS

### H.A.D. 46. MATERIALS LABORATORY IN INTERIOR DECORATION. (2)

First or second semester. One lecture and one three-hour laboratory period. Laboratory fee, \$3.00. Prerequisites, H.A.D. 40, 41. Analysis of decorative furnishings and introduction to practices used by professional decorators or craftsmen in the decorative trades. Emphasis on materials of decoration, their use and limitations.

## CRAFTS

### CR. 2. SIMPLE CRAFTS. (2)

Second semester. Two laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Creative expression in clay modeling, paper or metal sculpture, plaster or wood carving, and finger weaving. Emphasis is given to inexpensive materials and tools and to techniques that can be pursued in the home or the informal recreation center.

### CR. 5. PUPPETRY. (3)

First semester, alternate years. Three laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Making of marionettes and production of simple puppet shows. Valuable as a teaching, advertising, or recreational medium.

### CR. 20, 21. CERAMICS. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Elementary clay sculpture and pottery making stressing good design in form, decoration and glaze.

### CR. 30, 31. METALRY. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Etching, sawing, soldering, raising, and enameling using copper and sterling silver. Good, original design is stressed.

### CR. 40, 41. WEAVING. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisite, A. D. 1. Fee, \$3.00. Creative weaving on harness looms, inkle looms and cards. Emphasis is placed upon good texture, pattern and color with relation to the purpose of each textile.

### *For Advanced Undergraduates and Graduates*

## HOUSING AND APPLIED (ART) DESIGN

### H.A.D. 110. EXTERIOR-INTERIOR HOUSING DESIGN. (3)

First and second semesters. Two lectures and one two-hour laboratory period a week. Laboratory fee, \$6.00. Prerequisite, H.A.D. 41. An analysis of the works of contemporary architects and an overview of the field of architecture, relating the elements and principles to interiors.

### A. D. 100, 101. MURAL DESIGN. (2, 2)

First or second semester, alternate years. Three laboratory periods a week. Prerequisite, A. D. 1, 21. Fee, \$3.00. Group and individual expression serving two types of objectives; temporary murals for the public schools developed from classroom study and rendered in colored chalk on wrapping paper; murals for

## HOUSING, APPLIED DESIGN, AND CRAFTS

permanent architectural decoration considering propriety to setting and rendered in oil paint, gouache, fresco, or mosaic. Brief study of civilization's use of murals. Field trips to nearby murals having social significance.

### A. D. 120, 121. COSTUME ILLUSTRATION. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, A. D. 1, 2, 20, 21. Fee, \$3.00. Fashion rendering emphasizing clothing structure, representation of materials and development of individual rendering technique. Development of techniques employing transparent water color, India ink, Craftint, Zipatone and Burgess process. Study of styles of contemporary fashion illustrators.

### A. D. 124, 125. INDIVIDUAL PROBLEMS IN COSTUME. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, A. D. 1, 2, 20, 21, 120, 121. Fee, \$3.00. Advanced problems in fashion illustration or costume design for students who are capable of independent work. Program developed in consultation with the instructor.

### A. D. 132. ADVERTISING LAYOUT. (2)

First and second semesters. Two laboratory periods a week. Prerequisites, A. D. 1, 20, 30, 40. Fee, \$3.00. Designing of rough to finished layouts for advertisements for newspapers, magazines, packages, brochures and other forms of direct advertising. Included is the study of typography and illustration and their relationship to reproduction. Experience in use of the airbrush.

### A. D. 134, 135. INDIVIDUAL PROBLEMS IN ADVERTISING. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, A. D. 1, 20, 30, 40, 132. Fee, \$3.00. Advanced problems in advertising layout. Opportunity to build skills in one or more areas of advertising design.

### A. D. 136. MERCHANDISE DISPLAY. (2)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, 4, 30. Fee, \$3.00. Practice in effective merchandise display in cooperation with retail establishments. Study of other aspects of display through field experience, discussion, and research.

### A. D. 138. ADVANCED PHOTOGRAPHY. (2)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, 38, 39. Fee, \$3.00. Advanced experimental effects emphasizing design in photography. Each student must have his own camera.

### H.A.D. 142, 143. ADVANCED INTERIOR DESIGN. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, A. D. 1, 2, 40, 41. Fee, \$3.00. Designing of rooms drawn in perspective and isometrics and rendered in water color. Coordination with fabrics, floor and wall finishes. Study of budgets, costs, and manufacturing techniques. Field experiences.

### H.A.D. 144, 145. INDIVIDUAL PROBLEMS IN INTERIOR. (2, 2)

First and second semesters. Two laboratory periods a week. Prerequisites, A. D. 1, 2, 40, 41, 142, 143. Fee, \$3.00. Advanced problems in interior design for students who are capable of independent work. Students assume the role of interior decorator serving the needs of theoretical clients. Field experiences.

## CRAFTS

## CR. 102. CREATIVE CRAFTS. (2-4)

Summer session. Daily laboratory periods. Prerequisites, A. D. 1 and permission of the department. Fee, \$3.00. Interests of the persons enrolled will determine the crafts to be pursued. Suggested: block printing, wood burning, crayon decoration, paper sculpture, clay modeling, metalry, weaving. Excellent for teachers, directors of recreation centers, and persons who desire an introduction to recreational crafts.

## CR. 120, 121. ADVANCED CERAMICS. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, Cr. 20, 21. Fee, \$3.00. Advanced techniques in clay sculptures and in building pottery on the potter's wheel. Study of glaze composition and calculation. Experimentation with several clay bodies.

## CR. 124, 125. INDIVIDUAL PROBLEMS IN CERAMICS. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, Cr. 20, 21, 120, 121. Fee, \$3.00. Individual problems in clay sculpture and pottery making. Use of gas kiln fired in the medium cone range and experimental research in glazes and original textural effects.

## CR. 130, 131. ADVANCED METALRY. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, Cr. 30, 31. Fee, \$3.00. Advanced application of basic techniques in metal working and jewelry making. Introduction of ring making, stone setting and metal casting.

## CR. 134, 135. INDIVIDUAL PROBLEMS IN METALRY. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, Cr. 30, 31, 130, 131. Fee, \$3.00. Advanced problems in metalry and jewelry making. Supervised laboratory for students capable of independent work and research.

## CR. 140, 141. ADVANCED WEAVING. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, Cr. 40. Fee, \$3.00. Advanced weaving on four and eight harness looms stressing creative weaves in relation to functional use.

## CR. 144, 145. INDIVIDUAL PROBLEMS IN WEAVING. (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, A. D. 1, Cr. 40, 41, 141. Fee, \$3.00. Advanced problems in creative weaving.





# THE FACULTY

## *Administrative Officers*

LIPPEATT, Selma F., Professor of Home Economics and Dean of the College of Home Economics

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; Ph.D., Pennsylvania State University, 1953.

## *Professors*

CURTISS, Vienna, Professor of Applied Design

Certificate, Parsons School of Design, 1930; B.A., Arizona State College, 1933; M.A., Columbia University, 1935; Ed.D., 1957.

MITCHELL, T. Faye, Professor and Head of Department of Textiles and Clothing

B.S., State Teachers College, Springfield, Missouri, 1930; M.A., Columbia University, 1939.

## *Associate Professors*

BRAUCHER, Pela F., Associate Professor of Food and Nutrition

A.B., Goucher College, 1927; M.S., Pennsylvania State University, 1929.

BROWN, Helen I., Associate Professor and Head of Department of Food, Nutrition and Institution Administration

B.S., University of Vermont, 1938; M.A., Columbia University, 1948; Ph.D., Michigan State University, 1960.

WILSON, Leda A., Associate Professor of Home Economics

B.S., Lander College, 1943; M.S., University of Tennessee, 1950; Ed.D., 1954.

## *Assistant Professors*

BANGS, Sybil, Assistant Professor of Institution Administration

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BECKWITH, Cornelia L., Assistant Professor of Applied Design

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B.S., Pennsylvania State University, 1941; M.A., Columbia University, 1949.

ORVEDAL, Ruth W., Assistant Professor of Home Management

B.S., Middle Tennessee State College, 1937; M.S., University of Tennessee, 1941.

## FACULTY

ROPER, James B., Assistant Professor of Applied Design  
B.S., East Carolina College, 1961; M.A., 1963.

WILBUR, June C., Assistant Professor of Textiles and Clothing  
B.S., University of Washington, 1936; M.S., Syracuse University, 1940.

### *Instructors*

GARRISON, Martha, Instructor in Home Economics  
B.S., Michigan State University, 1938; M.S., University of Maryland, 1963.

LEWIS, Dorothy, Instructor in Applied Design  
B.S., Syracuse University, 1943; M.S., 1947.

LANZ, Sally J., Instructor in Food and Nutrition  
B.S., Albright College, 1956; M.S., Pennsylvania State University, 1960.

McKINLEY, Margaret, Instructor in Food and Nutrition  
B.S., Hood College, 1938; M.S., Columbia University, 1947.

NISONGER, Julie, Instructor in Applied Design  
B.A., Ohio State University, 1944.

ODLAND, Sheldon, Instructor in Housing and Applied Design  
B.S., Pennsylvania State University, 1957.

SUTTON, Paula, Instructor in Family Life and Management  
B.S., Woman's College, University of North Carolina, 1953; M.S., 1959.

YOUNG, Eleanor F., Instructor in Textiles and Clothing  
B.S., University of Maryland, 1955; M.S., 1958.

### *Lecturers*

BRITTON, Virginia, Lecturer in Family Economics  
Ph.D., University of Chicago.

DAVIS, Fremont, Lecturer in Applied Design

KINCAID, Virginia, Lecturer in Home Economics  
B.S., Madison College, 1925; M.A., Virginia Polytechnic Institute, 1941.

KREINIK, Estelle, Instructor in Textiles and Clothing  
B.A., Hunter College, 1941; M.A., Columbia University, 1943.

### *Research Assistants*

DAVIS, Nancy  
B.S., University of Maryland, 1962.

DAWSON, Virginia T.  
B.A., Ohio State University, 1937; M.S., University of Maryland, 1939.

## FACULTY

GOTT, Claire

M.S., University of London, 1958.

WATKINS, Genevieve C.

B.S., University of Maryland, 1956; M.S., 1961.

### *Graduate Assistants*

ARTHUR, Alinda

B.S., George Washington University, 1963.

COULON, Claudette

B.S., St. Joseph College, 1963.

GRAHAM, Ethel

B.S., Drexel Institute of Technology, 1962.

HARWOOD, Velma

B.S., University of Illinois, 1935.

KNIGHTON, Ruth

B.S., University of Massachusetts, 1961.

McTAGUE, Mary

B.S., Marymount College, 1962.

ROLL, Virginia

B.S., Radford College, 1959.

SOUTHERLAND, Eleanor

B.S., University of North Carolina, 1951.

STERLING, Mabel

B.S., University of Maryland, 1947; M.S., 1963.





CATALOG OF THE  
COLLEGE OF  
PHYSICAL  
EDUCATION,  
RECREATION  
AND HEALTH  
1964-66

THE  
UNIVERSITY  
OF  
MARYLAND

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The provisions of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

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# UNIVERSITY CALENDAR, 1963-64

## *Fall Semester 1963*

September 16-20	Monday-Friday	Fall Semester Registration
September 23	Monday	Instruction Begins
November 27	Wednesday	Thanksgiving Recess Begins After Last Class
December 1	Monday	Thanksgiving Recess Ends 8 a.m.
December 20	Friday	Christmas Recess Begins After Last Class

## *1964*

January 6	Monday	Christmas Recess Ends 8 a.m.
January 22	Wednesday	Pre-Examination Study Day
January 23-30	Thursday-Wednesday inclusive	Fall Semester Examinations

## *Spring Semester*

February 3-7	Monday-Friday	Spring Semester Registration
February 10	Monday	Instruction Begins
February 22	Saturday	Washington's Birthday, Holiday
March 25	Wednesday	Maryland Day, not a holiday
March 26	Thursday	Easter Recess Begins After Last Class
March 31	Tuesday	Easter Recess Ends, 8 a.m.
May 13	Wednesday	AFROTC Day
May 28	Thursday	Pre-Examination Study Day
May 29-June 5	Friday-Friday	Spring Semester Examinations
May 30	Saturday	Memorial Day, Holiday
May 31	Sunday	Baccalaureate Exercises
June 6	Saturday	Commencement Exercises

## *Summer Session 1964*

June 22	Monday	Summer Session Registration
June 23	Tuesday	Summer Session Begins
July 4	Saturday	Independence Day, Holiday
August 14	Friday	Summer Session Ends

## *Short Courses 1964*

June 15-19	Monday-Saturday	Rural Women's Short Course
August 3-7	Monday-Saturday	4-H Club Week
September 8-11	Tuesday-Friday	Firemen's Short Course



# UNIVERSITY CALENDAR, 1964-65

(Tentative)

## *Fall Semester 1964*

September 14-18	Monday-Friday	Fall Semester Registration
September 21	Monday	Instruction Begins
November 25	Wednesday	Thanksgiving Recess Begins After Last Class
November 30	Monday	Thanksgiving Recess Ends 8 a.m.
December 22	Tuesday	Christmas Recess Begins After Last Class

## *1965*

January 4	Monday	Christmas Recess Ends 8 a.m.
January 20	Wednesday	Pre-Examination Study Day
January 21-27	Thursday-Wednesday	Fall Semester Examinations

## *Spring Semester*

February 2-5	Tuesday-Friday	Spring Semester Registration
February 8	Monday	Instruction Begins
February 22	Monday	Washington's Birthday, Holiday
March 25	Thursday	Maryland Day, not a Holiday
April 15	Thursday	Easter Recess Begins After Last Class
April 20	Tuesday	Easter Recess Ends 8 a.m.
May 12	Wednesday	AFROTC Day
May 27	Thursday	Pre-Examination Study Day
May 28-June 4	Friday-Friday	Spring Semester Examinations
May 30	Sunday	Baccalaureate Exercises
May 31	Monday	Memorial Day, Holiday
June 5	Saturday	Commencement Exercises

## *Summer Session*

June 21	Monday	Summer Session Registration
June 22	Tuesday	Summer Session Begins
July 5	Monday	Independence Day, Holiday
August 13	Friday	Summer Session Ends

## *Short Courses*

June 14-18	Monday-Friday	Rural Women's Short Course
August 2-6	Monday-Friday	4-H Club Week
September 7-10	Tuesday-Friday	Firemen's Short Course

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B.S., University of Maryland, 1942; Ph.D., 1952.

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B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

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B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

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B.S., University of Minnesota, 1933; M.S., 1940; Ed.D., University of Maryland, 1956.

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Ph.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; Ph.D., 1933.

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B.A., Randolph-Macon College, 1928; M.A., 1937; Ph.D., Peabody College, 1939.

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B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; Ed.D., University of Maryland, 1952.

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R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

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B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.

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A.B., Huron College, 1933; M.A., University of Chicago, 1939; D.S.W., Western Reserve University, 1954.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; Ph.D., Pennsylvania State University, 1953.

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B.S., Tufts College, 1929; M.A., Harvard University, 1931; Ph.D., University of North Carolina, 1950.

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B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; Ph.D., 1935.

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B.A., Columbia University, 1937; M.A., 1938; Ph.D., 1953.

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D.D.S., Medical College of Virginia, 1947; Ph.D., University of Rochester School of Medicine and Dentistry, 1954.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; Ph.D. (Hon.), University of Louisville, 1946.

### *General Administrative Officers*

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B.A., University of Maryland, 1930; M.S., 1931.

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B.A., University of Minnesota, 1944.

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HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*

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CHARLES E. WHITE, *Chairman of the Lower Division*

B.S., University of Maryland, 1923; M.S., 1924; Ph.D., 1926.

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### COMMITTEE ON ADMISSIONS AND SCHOLASTIC STANDING

Russell B. Allen (Engineering), Chairman

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# THE COLLEGE

The College of Physical Education, Recreation, and Health provides preparation leading to the Bachelor of Science degree in the following professional areas: physical education, dance, health education, recreation, and physical therapy. The College also offers special curricula in safety education and elementary physical education. Moreover, in conjunction with the Graduate School and the College of Education, graduate programs leading to the master's and doctor's degrees are available in physical education, health education and recreation. The college provides a research laboratory for faculty members and graduate students who are interested in investigating the effects of exercise and various physical education activities upon the body, as well as determining methods and techniques of teaching various sports.

A two year required program of physical education is provided by this College for all men and women of the University, and a one year health education program for all freshmen women. The College provides an extensive intramural sports program for both men and women.

In addition to its various on-campus offerings, this College regularly conducts courses in physical education, health education and recreation for teachers in various parts of the State of Maryland and conducts workshops for teachers wherever requested by school officials.

## FACILITIES

The facilities of the College are unusual for a University of this size. Four separate buildings are used for the Women's Department, the Intramural Department, the Required Program for Men, and the Physical Education Teacher Education Program. There is also ample outdoor play space. Some of the facilities are shared with the Department of Intercollegiate Athletics.

## INDOOR ACTIVITIES

**THE STUDENT ACTIVITIES BUILDING.** This building houses the offices of the Department of Intercollegiate Athletics and the College of Physical Education, Recreation, and Health. It contains six activity teaching stations: the main arena, the swimming pool, the small gym, the weight training room, the wrestling room, and combination indoor golf driving range and dance studio. In addition, there are six classrooms, a research laboratory, a departmental library, and conference room.

The main arena of this building has a seating capacity of 12,004 and 19,796 sq. ft. of floor space. This arena provides facilities for class work in basketball, volleyball, badminton, and bait casting.

## FACILITIES

The swimming pool is divided into two areas by a permanent bulkhead. The shallow end is 42 x 24 feet and the large area is 42 x 75 feet with a depth ranging from 4 to 13 feet.

The small gymnasium may be used for basketball, volleyball, and gymnastics, including tumbling, trampolining and all types of apparatus work. The total floor space is 9,462 sq. ft.

The wrestling room (8,056 sq. ft.) is covered with mats.

The weight training class room is equipped with sufficient weights for (11) eleven stations of (3) three men each.

The dance studio-golf driving range (3,256 sq. ft.) has two nylon nets which provide four golf driving stations. In addition, part of the floor is covered with a green rug for putting practice. The nets may be raised so that the entire floor space is available for dancing.

**PREINKERT FIELD HOUSE.** Preinkert Field House contains the offices of some men and women teachers of Physical Education and Health Education. There is a regulation size swimming pool, 75 x 35 feet equipped with two one-meter diving boards. In the gymnasium, 90 x 50 feet, classes are held in badminton, volleyball, basketball, stunts and tumbling, apparatus and tennis. There are two large backboards used for indoor tennis practice. The adjacent classroom is used for professional classes and contains audio-visual equipment. The dance studio, used for modern dance classes, is 40 x 60 feet.

In addition to the above areas, there are locker and shower rooms used by those enrolled in physical education and those participating in recreational activities and a small lounge for major students.

**ARMORY.** The Armory is used primarily for an extensive men's intramural program. It houses the offices of the Director of Intramurals and an athletic equipment room from which students may secure equipment for recreational purposes. The 28,800 sq. ft. of floor space has four full length basketball courts, with badminton and volleyball courts superimposed on them. This facility is also used as an indoor track, with an indoor vaulting, high and broad jump pits, a one-tenth mile track, and a 70 yard straight-away.

**COLISEUM.** The Coliseum is used as a supplementary facility for the intramural and required program of physical education for men and women. Included in the facilities are an equipment issue room, adequate shower and locker rooms for both men and women, a classroom, and office space for several of the men's and women's physical education staff.

The 6,555 square feet of floor space is used primarily for required co-educational classes in square and social dance and for intramural basketball. In addition to the one large basketball court, however, there are five badminton and two volleyball courts available for co-ed class instruction.

## OUTDOOR ACTIVITIES

**THE STADIUM.** The stadium, with a seating capacity of 33,536 has a one-quarter mile cinder track with a 220-yard straightaway. Pits are available for pole vaulting and high and broad jumping. Immediately east of the stadium are facilities for the shot put, discus and javelin throw. The College of Physical Education, Recreation, and Health use these facilities for required classes in track and field. Also east of the stadium are 13.1 acres devoted to three practice football fields, the baseball stadium, a practice baseball, lacrosse, and soccer field. The College uses these facilities for major skill classes in football, soccer, and baseball. West of the stadium are 11.3 acres devoted entirely to physical education out-door play fields. There are four combination soccer-touch football play fields, with complete goal posts, and four softball fields with wire backstops.

Surrounding the Armory are four touch football fields and eight softball fields, encompassing 18.4 acres. These fields, plus the four in the Fraternity Row horseshoe are used exclusively for intramurals.

Immediately west of the Cole Activities Building are eight all-weather tennis courts. A modern 18-hole golf course was opened in 1957. This 204-acre course includes two lakes, and an additional 5.8-acre golf driving range for instructional purposes. The golf driving range, equipped with lights, and the golf course greatly adds to our present recreational facilities. An outdoor playing field 300 feet by 600 feet is also provided for touch football, soccer, speedball and softball.

The outdoor facilities adjacent to the Preinkert Field House include eight hard surfaced tennis courts, an archery range with space for 18 targets, two softball diamonds and combination hockey and soccer fields.

## RESEARCH LABORATORY

One of the important aspects of advanced study at the University of Maryland is research. To encourage research, the College of Physical Education, Recreation, and Health makes available to the student a spacious, well equipped research laboratory. Students and faculty alike are encouraged to make use of the laboratory and its facilities for the purpose of conducting their special research projects.

## CULTURAL AND RECREATIONAL OPPORTUNITIES

Near the University of Maryland are found many points of cultural and recreational interest. In Washington, D. C., one may visit national shrines and museums, e.g., the Smithsonian Institute, the Medical Museum, etc., and also attend lectures, musical recitals and stage productions, featuring outstanding personages. The Freer Gallery of Art and the Folger Shakespeare Library are located in Washington. Within from one to four hours traveling time by car one finds such points of historical and recreational interest as Mt. Vernon, Gettysburg, Harpers Ferry, Antietam, Annapolis,



## GENERAL INFORMATION

Monticello, Williamsburg, Jamestown, Yorktown, the Shenandoah Valley, Skyline Drive, Rehoboth Beach and Ocean City, Maryland. A number of Chesapeake Bay beaches and resorts can be reached from the campus within forty-five minutes. The University also makes available for recreational purposes, swimming pools, tennis courts, and similar facilities. During Summer School a special recreational program is conducted for all students; this includes sightseeing tours, group trips to summer stock stage productions, square dancing, musical events, sports tournaments, and movies.

## GENERAL INFORMATION

### ADMISSION

#### *Fall Semester*

All applications for full-time undergraduate admission for the Fall Semester at the College Park campus must be received by the University on or before July 15. Any student registering for seven (7) or more semester hours of work is considered a full-time student.

Under unusual circumstances, applications will be accepted between July 15 and September 1. Applicants for full-time attendance filing after July 15 will be required to pay a non-refundable \$15.00 late fee to defray the cost of special handling of applications after that date. This late fee is in addition to the \$10.00 application fee.

All undergraduate applications, both for full-time and part-time attendance, and all supporting documents for an application for admission must be received by the appropriate University office by September 1. This means that the applicant's educational records, ACT scores (in the case of new freshmen) and medical examination report must be received by September 1.

#### *Spring Semester*

The deadline for the receipt of applications for the Spring Semester is January 1.

#### *University College*

The application deadlines and fees *do not* apply to students registering in the evening classes offered by the University College.

#### *Graduate School*

Application for admission to the Graduate School must be made by September 1 for the fall term and by January 1 for the spring term on blanks obtained from the Office of the Graduate School. Admission to the summer



## GENERAL INFORMATION

session is governed by the date listed in the Summer School catalog. The summer session deadline date is generally June 1.

### ENTRANCE REQUIREMENTS

All students desiring to enroll in the College of Physical Education, Recreation, and Health must apply to the Director of Admissions of the University of Maryland at College Park.

Sixteen units of high school credit are required for admittance to this college. *Required* high school subjects are: four units of English, one unit of social science, and one unit of natural science. *Desirable* high school subjects include: algebra, plane geometry and additional natural and physical sciences, such as chemistry and physics.

Satisfactory health and physical vigor are essential for persons pursuing a career in the areas of this College.

### EXPENSES

Annual expenses of attending the University are approximately as follows: \$250.00 fixed charges, \$96.00 special fees, \$420.00 board, \$290.00 to \$320.00 lodging for Maryland residents, or \$340.00 to \$370.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students and is payable only once. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. A charge of \$400.00 is assessed to all students who are non-residents of the State of Maryland.

For students enrolled in the physical therapy curriculum the annual cost for the junior and senior years taken on the Baltimore campus include: \$270.00 fixed charges; \$77.00 special fees; approximately \$500.00 board; lodging for women \$135.00 for a double room, \$180.00 for a single room; lodging for men \$300.00 for a double room, \$360.00 for a single room. A charge of \$170.00 is assessed to all students who are non-residents of the State of Maryland.

*An Adventure in Learning*, the undergraduate catalog of the University, contains a detailed statement of fees and expenses and includes changes in fees as they occur. A copy may be requested from the Catalog Mailing Office, North Administration Building, University of Maryland at College Park.

### DEFINITION OF RESIDENCE AND NON-RESIDENCE

Students who are minors are considered to be resident students if at the time of their registration their parents have been domiciled in the State of Maryland for at least six months.

The status of the residence of a student is determined at the time of his first registration in the University and may not thereafter be changed by him unless, in the case of a minor, his parents move to and become legal

## GENERAL INFORMATION

residents of Maryland by maintaining such residence for at least six months. However, the right of the minor student to change from a non-resident status to resident status must be established by him prior to the registration period set for any semester.

Adult students are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least six months provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the six-months period referred to above except in those cases in which the adult was domiciled in Maryland for at least six months prior to his entrance into the armed service and was not enrolled in any school during that period.

The word "domicile" as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

## AIR SCIENCE INSTRUCTION

All male students, unless specifically exempt under University rules, are required to take Basic Air Science training for a period of two semesters. The successful completion of this sequence is a prerequisite for graduation, and must be taken by all eligible students during the first two semesters of attendance at the University. Transfer students who do not have the required two semesters of Air Science training will be required to complete the course or to take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses, during their junior and senior years, which lead to a regular or reserve commission in the United States Air Force.

For further details concerning Air Science, refer to *University General and Academic Regulations*, a publication available to all entering undergraduate students.

## FOR ADDITIONAL INFORMATION

Detailed information concerning the American Civilization Program, fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September and February of each year to all new undergraduate students.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

## UNDERGRADUATE PROFESSIONAL CURRICULA

### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

## UNDERGRADUATE PROFESSIONAL CURRICULA

### GUIDANCE

At the time of matriculation and first registration, each student is assigned to a member of the faculty of the College who acts as the student's academic adviser. This faculty member will be in physical education, recreation, health education or physical therapy, depending on the student's choice of curriculum. The student should confer regularly with his adviser prior to and at the time of each registration.

### NORMAL LOAD

The normal load for students in this College is 17-19 credit hours per semester, including the credits for required Air Science for men. The requirements in physical education for men, and in physical education and health for women are fulfilled by professional courses in the College. No student may register for more than 19 hours unless he has a "B" average for the preceding semester and approval of the Dean of the College.

### ELECTIVES

Electives should be planned carefully, and well in advance, preferably during the orientation course the first semester, or with the student's academic adviser during the second semester. It is important to begin certain sequences as soon as possible to prevent later conflict. Electives may be selected from any department of the University in accordance with a student's professional needs. Those selected must meet with the approval of the adviser and the Dean of the College.

### TRANSFER STUDENTS

Only students in good standing as to scholarship and conduct are eligible to transfer into this College from another college or university. Only



## UNDERGRADUATE PROFESSIONAL CURRICULA

courses applicable to his curriculum and passed with a grade of "C" or better will be transferred. Students wishing to transfer to this College from another college of this University are subject to the general University regulations on this subject, explained in the publication, *University General and Academic Regulations*.

### FRESHMAN AND SOPHOMORE PROGRAMS

The work of the first two years in this College is designed to accomplish the following purposes: (1) provide a general basic or core education and prepare for later specialization by giving a foundation in certain basic sciences; (2) develop competency in those basic techniques necessary for successful participation in the professional courses of the last two years.

While much of the academic course work will be alike, the technique courses will vary considerably in the different curriculums. The core of University requirements should be completed in the first two years in such manner as to justify acceptance as a junior in the desired major. The technique courses must be satisfactorily completed, or competencies demonstrated before the student can be accepted for the advanced courses in methods and in student teaching. It is very important that each requirement be met as it occurs.

### JUNIOR STATUS

Students are permitted to register for courses numbered 100 and above only after they have achieved junior status. Detailed information pertaining to junior status will be found in the *University General and Academic Regulations*.

### STUDENT TEACHING

Opportunity is provided for student teaching experience in Physical Education and/or Health Education. The student devotes eight weeks during his last semester of his senior year to observation, participation, and teaching under a qualified supervising teacher in an approved elementary, junior or senior high school or in a combined program at the elementary and secondary levels in the vicinity of the University. The student progresses to gradual assumption of all of the responsibilities of the supervising teacher. A University supervisor from the College of Physical Education, Recreation, and Health visits the student periodically and confers with both the student teacher and the cooperating teacher, giving assistance when needed.

To be eligible for student teaching, the student must (1) have an accumulative grade point average of at least a 2.3, (2) *must have the recommendation of the University supervising teacher*, and (3) *must have fulfilled all required courses for the B. S. degree except those in the Block Student Teaching Semester*. The student must obtain a grade of "C" or better in all professional courses in his curriculum and he must register for all



## UNDERGRADUATE PROFESSIONAL CURRICULA

courses in the "Block" concurrently. *Those desiring to teach at the elementary level must have successfully completed P. E. 120 and those desiring an elementary minor in physical education in addition, must complete P. E. 55, 57, and 195.*

## DEGREES

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as herein prescribed by the College of Physical Education, Recreation, and Health.

Each candidate for a degree must file a formal application with the Office of the Registrar eight weeks prior to the date of graduation.

## CERTIFICATION

The Maryland State Department of Education certifies for teaching only when an applicant has a tentative appointment to teach in a Maryland county school. No certificate may be secured by application of the student on graduation. Course content requirements for certification are indicated with each curriculum. Certification is specifically limited to graduates who "rank academically in the upper four-fifths of the class and who make a grade of 'C' or better in student teaching." In order to insure the meeting of these requirements, students will not be approved for student teaching except as indicated below. A student intending to qualify as a teacher in Baltimore, Washington, or other specific situations should secure a statement of certification requirements before starting work in the junior year and discuss them with his academic adviser.

# PROFESSIONAL CURRICULA

## PHYSICAL EDUCATION

This curriculum prepares students (1) for teaching physical education in the secondary school, (2) for coaching, and (3) for leadership in youth and adult groups which offer a program of physical activity. The first two years of this curriculum are considered to be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field specialization. In addition, there is considerable emphasis placed upon the development of skills in a wide range of motor activities. Further, students are encouraged to select related areas, especially in the fields of biology, social science, psychology, health education, and recreation as fields of secondary interest. These materially increase the vocational opportunities which are available to a graduate in physical education.

**EQUIPMENT:** Students may be required to provide individual equipment for certain courses.

**UNIFORMS:** Suitable uniforms, as prescribed by the College are required for the activity classes and for student teaching. These uniforms should be worn only during professional activities.

*Men*—During the freshman and sophomore years, men will wear red and black T-shirts, black trunks, white socks, gym shoes, supporter and sweat suit. During the junior year, men will purchase full length black pants with gold braid on side and a black jacket, which are required for student teaching.

*Women*—Tailored blue shorts, white shirt, ankle socks, and tennis shoes, and leotard and skirt, and warm-up suit.

*For Student Teaching*—An appropriate teaching costume will be selected under the guidance of the supervisor of student teaching before the beginning of the junior year.

# PHYSICAL EDUCATION CURRICULUM

## PHYSICAL EDUCATION CURRICULUM FOR MEN

	Semester	
	I	II
<b>FRESHMAN YEAR*</b>		
Eng. 1, 2—Composition and American Literature .....	3	3
G. & P. 1—American Government .....	3	..
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking .....	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 50—Rhythmic Analysis and Movement .....	1	..
P. E. 59—Skills in Folk, Square and Social Dance .....	..	1
P. E. 61, 63—Skills Laboratory .....	2	2
A.S. 2, 3—Basic Air Science .....	2	2
Electives <sup>1</sup> .....	2	5
Total .....	17	17
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry) .....	3-4	..
Hea. 40—Personal and Community Health .....	..	3
P. E. 65, 67—Skills Laboratory .....	2	2
P. E. 77—Methods of Teaching Aquatics .....	..	2
Hea. 50 .....	1	..
Electives .....	1	..
Total .....	17-18	17
<b>JUNIOR YEAR</b>		
Ed. 110—Human Development and Learning .....	(6)	6
P. E. 100—Kinesiology .....	4	..
P. E. 105, 107—Skills Laboratory .....	1	1
P. E. 113, 115—Methods and Materials for Secondary Schools .....	3	1
P. E. 123 or 125—Coaching Athletics .....	..	3
Hea. 50—First Aid and Safety .....	..	1
Electives <sup>2</sup> .....	6	9
Total .....	17	17

\* Students classified in Group 3 on Mathematics Entrance Test must take Math. O.  
P. E. 71 may be required, depending upon swimming ability of student.

<sup>1</sup> Students must elect one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, Psych. 1. Students electing Econ. 31 or 37, or Phil. 1 or Psych. 1 which cannot be taken before the sophomore year, must register for Hea. 40 the second semester of the freshman year.

<sup>2</sup> Every student in junior or senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

## PHYSICAL EDUCATION CURRICULUM

SENIOR YEAR	Semester	
	I	II
P. E. 140—Curriculum, Instruction and Observation . . . . .	3	3
P. E. 160—Theory of Exercise . . . . .	3	..
P. E. 180—Measurement in Physical Education and Health . . . . .	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation and Health . . . . .	..	3
Ed. 145—Principles and Methods of Secondary Education . . . . .	..	3
Ed. 148—Student Teaching in Secondary Schools <sup>1</sup> . . . . .	..	8
Electives <sup>2</sup> . . . . .	11	..
Total . . . . .	17	17

## PHYSICAL EDUCATION CURRICULUM FOR WOMEN

FRESHMAN YEAR*		
Eng. 1, 2—Composition and American Literature . . . . .	3	3
G. & P. 1—American Government . . . . .	3	..
Zool. 1—General Zoology . . . . .	..	4
Speech 7—Public Speaking . . . . .	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health . . . . .	2	..
P. E. 40—Basic Body Controls . . . . .	1	..
P. E. 50—Rhythmic Analysis and Movement . . . . .	2	..
P. E. 52—Dance Techniques . . . . .	..	1
P. E. 56—Skills and Methods in Folk and Square Dance . . . . .	..	1
P. E. 62, 64—Skills Laboratory . . . . .	2	2
Electives <sup>3</sup> . . . . .	..	4
Total . . . . .	15	15

\* P. E. 72 may be required, depending upon swimming ability of student.

Students classified in Group 3 on Mathematics Entrance Test must take Math. O.

<sup>1</sup> The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Elementary Schools.) When Ed. 148 is scheduled Ed. 145, P. E. 140, and P. E. 190 must be scheduled concurrently. This may be done either semester.

<sup>2</sup> Every student in junior or senior year must elect either Hea. 120, P. E. 120 or Rec. 170.

<sup>3</sup> Students must elect one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, or Psych. 1. Students electing Econ. 31 or 37, or Phil. 1 or Psych. 1, which cannot be taken before the sophomore year, must register for Hea. 40 the second semester of the freshman year.



# PHYSICAL EDUCATION CURRICULUM

	—Semester—	
	I	II
<b>SOPHOMORE YEAR*</b>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry) .....	3-4	..
Hea. 40—Personal and Community Health .....	..	3
P. E. 54—Dance Techniques .....	1	..
P. E. 58—Skills and Methods in Social Dance .....	1	..
P. E. 60—Dance Composition .....	..	2
P. E. 66, 68—Skills Laboratory .....	2	2
Total .....	17-18	17
<b>JUNIOR YEAR</b>		
Ed. 110—Human Development and Learning .....	(6)	6
P. E. 78—Methods of Teaching Aquatics .....	..	2
P. E. 82, 84—Officiating <sup>1</sup> .....	0	0
P. E. 100—Kinesiology .....	4	..
P. E. 114, 116—Methods in Physical Education for Secondary Schools .....	3	1
P. E. 124, 126—Practicum in Leadership .....	2	2
Hea. 50—First Aid and Safety .....	..	1
Electives <sup>2</sup> .....	3	7
Total .....	15	16
<b>SENIOR YEAR</b>		
P. E. 140—Curriculum, Instruction and Observation .....	..	3
P. E. 160—Theory of Exercise .....	3	..
P. E. 180—Measurement in Physical Education and Health .....	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health .....	..	3
Ed. 145—Principles and Methods of Secondary Education .....	..	3
Ed. 148—Student Teaching in the Secondary Schools <sup>3</sup> .....	..	8
Electives <sup>2</sup> .....	9	..
Total .....	15	17

\* P. E. 74 and/or 76 may be required, depending upon swimming ability of student.

<sup>1</sup> Students must hold one officials rating to be eligible for student teaching.

<sup>2</sup> Every student in junior or senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

<sup>3</sup> The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Secondary Schools.) When Ed. 148 is taken, Ed. 145, P. E. 140 and P. E. 190 must be scheduled concurrently. This may be done either semester.

## PHYSICAL EDUCATION CURRICULUM

### REQUIREMENTS FOR DEGREE IN PHYSICAL EDUCATION

Requirements for the Bachelor of Science degree in physical education in the College of Physical Education, Recreation and Health are as follows:

<i>Men</i>	<i>Sem. Cr.</i>
Professional Physical Education courses (P.E. 30, 50, 59, 61, 63, 65, 67, 77, 100, 105, 107, 113, 115, 123, or 125, 140, 160, 180, 190) .....	39
Foundation science courses as prescribed (Zool. 1, 14, 15; Physical Science 3-4 hours) .....	15-16
Education courses as prescribed .....	17
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37; Psych. 1, or Phil. 1; G. & P. 1) .....	24
Specially prescribed requirements (Speech 7) .....	2
University requirements in Basic Air Science .....	4
Health courses as prescribed (Hea. 40, 50) .....	4
Electives (must include either P.E. 120; Hea. 120, or Rec. 170) .....	30
Total .....	136-137

<i>Women</i>	
Professional Physical Education courses (P.E. 30, 40, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 78, 82, 84, 100, 114, 116, 124, 126, 140, 160, 180, 190) .....	45
Foundation science courses as prescribed (Zool. 1, 14, 15; Physical Science 3-4 hours) .....	15-16
Education courses as prescribed .....	17
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37; Psych. 1, or Phil. 1; G. & P. 1) .....	24
Specially prescribed requirements (Speech 7) .....	2
Health courses as prescribed (Hea. 40, 50) .....	4
Electives (must include either P.E. 120, Hea. 120, or Rec. 170) .....	20
Total .....	127-128

### MINOR IN PHYSICAL EDUCATION

20 semester hours in physical education and 4 semester hours in cognate areas.

### REQUIRED COURSES

Men—P.E. 30; P.E. 61, 63, 65, 67, (2-6\*); P.E. 113; P.E. 101 or 103.  
Women—P.E. 30; P.E. 62, 64, 66, 68, (2-6\*); P.E. 114, 116; P.E. 124, 126.

\* Selection of courses will be made according to student's background.

## PHYSICAL EDUCATION CURRICULUM

### ELECTIVE COURSES

Men and Women—P.E. 69, 78, 100; P.E. 123; P.E. 125; P.E. 140; P.E. 160; P.E. 180; P.E. 190; Hea. 110; Hea. 120; Rec. 30; Rec. 40; Rec. 100; Rec. 150; Rec. 170.

If planning to teach, the cognate courses for men should be Hea. 40 and Hea. 50; for women, Hea. 50 and Hea. 120. Men should include P.E. 123 or P.E. 125 if planning to coach.

Note: To be certified to teach in Maryland, 30 semester hours are required in this area, including the following or equivalent: Zool. 14, 15; Hea. 50; P.E. 100, 140; Ed. 145 and Ed. 148 including at least 25 hours of student teaching.

### MINOR IN ELEMENTARY SCHOOL PHYSICAL EDUCATION

There are two plans for a minor in elementary school physical education. Plan A is for students in the College of Physical Education, Recreation, and Health, and Plan B is for students outside the College of Physical Education, Recreation, and Health.

#### I. Plan A. (for students in this College)

10 semester hours in elementary school physical education courses and 10 hours in cognate areas.

##### *Required courses*

P.E. 55, 57, 120, 195.

##### *Elective courses*

10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

##### *Student teaching*

Students will be required to do 4 weeks of their 8 weeks student teaching at the elementary school level in physical education.

#### II. Plan B. (for students outside this College)

13 semester hours in elementary school physical education courses and 10 hours in cognate areas.

##### *Required courses*

P.E. 55, 57, 120, 130, 195.

##### *Elective courses*

10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

### RELATED FIELDS MINOR

This minor requires a minimum of 18 credit hours to be elected from any three of the four following areas:

## DANCE CURRICULUM

- I. Health Education —6 hours
  - a. Hea. 120—Methods and Materials in Health Education.
  - b. Hea. 150—Health Problems of Children and Youth.
- II. Recreation—6 hours
  - a. Rec. 120—Program Planning
  - b. Rec. 170—General Fundamentals of Recreation
- III. Safety Education—6 hours
  - a. Hea. 70—Safety Education
  - b. Hea. 80—The Driver, His Characteristics and Improvement
- IV. Dance—6 hours \*
  - a. P.E. 55
  - b. P.E. 54, 70, 80
  - c. P.E. 56, 58, 59
  - d. P.E. 50, 192

## DANCE

With the increasing recognition of the importance and scope of dance in educational programs, the need for teachers adequately trained in dance far exceeds the number available. The professional curriculum in dance is constructed to meet the steadily rising demand for personnel qualified to teach dance in college, secondary, elementary schools, in camps, recreational agencies and in preparation for dance therapy.

The course of study provides general background knowledge in culture and foundation sciences as well as particularization in dance skills, theory and philosophy. Courses in music, theory, acting and stagecraft answer additional needs for dance production planning. Students are urged to enrich their background in an interchange in creative arts in other departments of the University, and opportunity is given to serve as assistants in the non-professional program.

Through electives the program may be adapted to meet the interests of the particular student, combining dance with fine arts, physical education, recreation, theatre, speech therapy, nursery school-kindergarten education, psychology, elementary education.

The majors in dance have performance opportunities in the Dance Group which presents one major concert each year, and the Demonstration Group which performs on and off campus.

Additional dance experience is available in nearby Washington for the student who may wish to visit professional studios. Many opportunities

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\* Selection of courses will be made according to student's background and interests upon consultation with the dance adviser.



## DANCE CURRICULUM

are provided for students to meet outstanding artists in the field and to take part in symposia and workshops on campus and in Washington. The proximity of Washington and the availability of the embassies affords many unique cultural experiences.

Approximate adjustments will be made in the curriculum for men who wish to pursue a major in dance.

### DANCE CURRICULUM

FRESHMAN YEAR*	Semester—	
	I	II
Eng. 1, 2—Composition and American Literature .....	3	3
G. & P 1—American Government .....	3	..
Zool. 1—General Zoology .....	..	4
Speech 8—Acting .....	3	..
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 40—Basic Body Controls .....	1	..
P. E. 50—Rhythmic Analysis and Movement .....	1-2	..
P. E. 52—Dance Techniques .....	..	1
P. E. 56, 58—Folk, Square, Social Dance .....	1	1
P. E. 62—Elementary Techniques of Sports .....	2	..
Hea. 40—Personal and Community Health .....	..	3
Electives <sup>1</sup> .....	..	3-6
Total .....	16-17	15-18
SOPHOMORE YEAR		
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	..	..
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
P. E. 54—Dance Techniques .....	1	..
P. E. 60—Dance Composition .....	..	2
Hea. 50—First Aid and Safety .....	..	1
Music 20—Survey of Music Literature; and Music 7—Theory of Music .....	3	3
Electives <sup>2</sup> .....	0-3	0-3
Total .....	17	16-19

\* P. E. 72 may be required, depending on the swimming ability of the student.

<sup>1</sup> Students must elect, in either the freshman or sophomore year, one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, Psych. 1. Economics may be taken in the sophomore year only.

<sup>2</sup> Students must elect one of the following: A. D. 1-Design, Art 5, Art 15, Art 20.

## DANCE CURRICULUM

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<b>JUNIOR YEAR</b>		
P. E. 70, 80—Intermediate and Advanced Dance .....	2	2
P. E. 100—Kinesiology .....	4	..
P. E. 114—Methods in Physical Education for Secondary Schools .....	3	..
P. E. 126—Practicum in Leadership .....	..	2
P. E. 182—History of Dance .....	3	..
P. E. 192—Percussion Accompaniment & Music for Dance ..	..	2
Speech 175—Stage Design and Lighting .....	3	..
Art or Music (100 Level)** .....	..	3
Ed. 110—Human Development and Learning .....	(6)	6
Electives * .....	..	0-6
Total .....	18	12-18
<b>SENIOR YEAR</b>		
P. E. 110—Dance Production .....	3	..
P. E. 140—Curriculum, Instruction and Observation .....	..	3
P. E. 184—Theory and Philosophy of Dance .....	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation and Health .....	..	3
Ed. 145—Principles and Methods of Secondary Education ..	..	3
Ed. 148—Student Teaching in the Secondary Schools <sup>1</sup> .....	..	8
Electives * .....	12	..
Total .....	18	17

## REQUIREMENTS FOR DEGREE IN DANCE \*

Requirements for the Bachelor of Science degree in physical education, with a major in dance are as follows:

College dance courses (P.E. 50, 52, 54, 56, 58, 60, 70, 80, 110, 126, 182, 184, 192) .....	24
Prescribed courses in related areas (P.E. 30, 40, 62, 100, 114, 140, 190; Music 7, 20; Speech 8; Art or Music (100 Level) 3 semester hours; A.D. 175; Art 5, Art 15, or Art 20) ..	37
Prescribed Health Courses (Hea. 40, 50) .....	4
General requirements (Eng. 1, 2, 3, 4, or 5, 6; H. 5, 6; Soc. 1, Psych. 1, Econ. 31, 37 or Phil. 1; G. & P. 1) .....	24
Foundation Science Courses (Zool. 1, 14, 15) .....	12
Education courses as prescribed .....	17
Electives .....	14-24
Total .....	132-142

\* P. E. 90 Workshop 1-6 credits required of dance majors.

<sup>1</sup> When Ed. 148 is taken Ed. 145, P. E. 140, P. E. 190 must be scheduled concurrently. This may be done either semester.

\*\* By permission of dance adviser only.

## RECREATION CURRICULUM

**MINOR IN DANCE:** The minor in dance is adapted to meet the needs of students majoring in such areas as speech, music, art, nursery school-kindergarten education, psychology, elementary education, recreation, and physical education. Other combinations may be considered depending on the student's interest and background.

The minor shall consist of a significant group of courses totaling twenty semester hours. The required courses in the dance area will be chosen from the following: Skills in Modern Dance, P.E. 52, 54, 70, 80 (Beginning through Advanced); P.E. 56, 58, 55, Skills and Methods in Social, Folk and Square Dance, Elementary School Rhythmic Activities; P.E. 60, Composition and Methods; P.E. 50, Rhythmic Analysis and Movement; P.E. 110, Dance Production; P.E. 182, History of Dance; P. E. 184, Theory and Philosophy of Dance; P.E. 192, Percussion and Music for Dance. Electives shall be selected from the cognate areas depending on the student's major. All programs must be approved by the department adviser.

**SUGGESTED MINORS FOR THE DANCE MAJOR:** Music, physical education, recreation, split sociology-psychology, speech, and split recreation-sociology.

## RECREATION

The increased amount of leisure time existent in our society because of the rapid development of modern civilization, and the imperative need for guidance in the wise use of that leisure time has made us cognizant of the need for trained recreation leaders.

This curriculum, therefore, is designed to meet the needs of students who wish to qualify for the many positions in the field of recreation, and the needs of those students who desire a background of culture and skills which will enable them to render distinct contributions to community life. The College draws upon various other departments and colleges within the University for courses to balance and enrich its offerings for its recreation major students.

Majors in recreation also have opportunity for observation and practical experiences in local recreation and agency programs, in those programs of metropolitan Washington and Baltimore, and in various programs of the Armed Forces, the American Red Cross, etc.

## RECREATION CURRICULUM

### RECREATION CURRICULUM FOR MEN

FRESHMAN YEAR	Semester	
	I	II
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Introduction to Philosophy <sup>1</sup> .....	3	..
G. & P. 1—American Government .....	..	3
Speech 1—Public Speaking .....	..	3
Speech 4—Voice and Diction .....	3	..
Zool. 1—General Zoology .....	..	4
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 50—Rhythmic Analysis and Movement .....	1	..
P. E. 59—Skills in Folk, Square, and Social Dance .....	..	1
P. E. 61, 63, 65, 67 or 105, 107—Sport Skills and Gymnastics <sup>1</sup> .....	2	2
Rec. 10—Recreation Orientation .....	0	0
A. S. 2, 3—Basic Air Science .....	2	2
P. E. 71, 73, 75, 77, 79—Swimming, Diving, Aquatics .....	1-2	..
Total .....	15½-16½	18

#### SOPHOMORE YEAR

Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Speech 10—Group Discussion .....	..	2
Zool. 14—Human Anatomy and Physiology (or Bot. 1—General Botany) .....	4	..
Hea. 50—First Aid and Safety .....	..	1
A. D. 1—Design .....	3	..
Hea. 40—Personal and Community Health .....	..	3
Rec. 30—History and Introduction to Recreation .....	2	..
Rec. 40—Camp Counseling (or Rec. 150—Camp Management if experienced) .....	..	2-3
Electives .....	1	1
Total .....	16	15-16

#### JUNIOR YEAR

Basic Academic Sequence <sup>2</sup> (9 hours) .....	3	6
Cr. 2—Simple Crafts .....	2	..
Music 16—Fundamentals for the Classroom Teacher .....	3	..
P. E. 113—Methods and Materials for Secondary Schools .....	3	..
Rec. 100—Co-recreational Games and Programs .....	..	2
Rec. 110—Nature Lore .....	..	2
Rec. 120—Program Planning .....	3	..

<sup>1</sup> Econ. 31 or 37 may be substituted for Phil. 1 or Soc. 1 but may not be taken until the sophomore year.

<sup>2</sup> Choice of activities depends upon student's background and interest.



## RECREATION CURRICULUM

JUNIOR YEAR ( <i>Continued</i> )	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Soc. 2—Principles of Sociology .....	..	3
Psych. 1—Introduction to Psychology .....	..	3
Electives .....	2	2
Total .....	16	18
SENIOR YEAR		
Ed. 110—Human Development and Learning .....	6	(6)
P. E. 101—Organization and Officiating in Intramurals .....	1	..
Rec. 140—Observation and Field Work in Recreation .....	..	5
Rec. 180—Leadership Techniques and Practices .....	3	..
Rec. 190—Organization and Administration of Recreation .....	..	3
Soc. 118—Community Organization .....	3	..
Speech 113—Play Production .....	..	3
Electives .....	6	4
Total .....	19	15

## RECREATION CURRICULUM FOR WOMEN

### FRESHMAN YEAR

Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Introduction to Philosophy <sup>1</sup> .....	3	..
G. & P. 1—American Government .....	3	..
Speech 1—Public Speaking .....	..	3
Speech 4—Voice and Diction .....	3	..
Zool. 1—General Zoology .....	..	4
Hea. 40—Personal and Community Health .....	..	3
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 40—Basic Body Controls .....	1	..
P. E. 50—Rhythmic Analysis and Movement .....	1	..
P. E. 52—Modern Dance .....	..	1
P. E. 56, 58—Skills and Methods in Folk and Square Dance, Skills and Methods in Social Dance .....	1	1
P. E. 62, 64, 66 or 68—Elementary Techniques of Sports and Gymnastics <sup>2</sup> .....	2	or 2
Rec. 10—Recreation Orientation .....	0	0
Total .....	17-19	15-17

<sup>1</sup> Econ. 31 or Econ. 37 may be substituted for Phil. 1 or Soc. 1 but may not be taken until the sophomore year.

<sup>2</sup> Choice of activities depends upon student's background and interest.

<sup>2</sup> The basic sequence encourages a student to pursue his minor in academic fields, possibly sociology-psychology.

# RECREATION CURRICULUM

	Semester	
	I	II
SOPHOMORE YEAR		
Eng. 3, 4—Composition and World Literature . . . . .	3	3
H. 5, 6—History of American Civilization . . . . .	3	3
Speech 10—Group Discussion . . . . .	..	2
Hea. 50—First Aid and Safety . . . . .	..	1
P. E. 62, 64, 66 or 68—Elementary Techniques of Sports and Gymnastics <sup>1</sup> . . . . .	2	or 2
P. E. 72, 74, 76 or 78—Elementary, Intermediate and Advanced Swimming and Diving; Methods of Aquatics <sup>1</sup> . . . . .	1-2	or 1-2
A. D. 1—Design . . . . .	3	..
Psych. 1—Introduction to Psychology . . . . .	..	3
Rec. 30—History and Introduction to Recreation . . . . .	2	..
Rec. 40—Camp Counseling (or Rec. 150—Camp Management if experienced) . . . . .	..	2-3
Zool. 14—Human Anatomy and Physiology (or Bot. 1—General Botany) . . . . .	4	..
Total . . . . .	15-19	14-19
JUNIOR YEAR		
Basic Academic Sequence <sup>2</sup> (9 hours) . . . . .	3	6
Cr. 2—Simple Crafts . . . . .	2	..
Music 16—Fundamentals for the Classroom Teacher . . . . .	3	..
P. E. 114—Methods in Physical Education for Secondary Schools . . . . .	3	..
Rec. 100—Co-recreational Games and Programs . . . . .	2	..
Rec. 110—Nature Lore . . . . .	..	2
Rec. 120—Program Planning . . . . .	3	..
Soc. 2—Principles of Sociology . . . . .	3	..
Speech 113—Play Production . . . . .	..	3
Electives . . . . .	..	6
Total . . . . .	19	17
SENIOR YEAR		
Ed. 110—Human Development and Learning . . . . .	6	(6)
Rec. 140—Observation and Field Work in Recreation . . . . .	..	5
Rec. 180—Leadership Techniques and Practices . . . . .	3	..
Rec. 190—Organization and Administration of Recreation . . . . .	..	3
Soc. 118—Community Organization . . . . .	3	..
Electives . . . . .	6	5
Total . . . . .	18	13

<sup>1</sup> Choice of activities depends upon student's background and interest.

<sup>2</sup> The basic academic sequence encourages a student to pursue his minor in academic fields, possibly sociology-psychology.

## REQUIREMENTS FOR DEGREE IN RECREATION

Requirements for the Bachelor of Science degree in recreation in the College of Physical Education, Recreation, and Health are as follows:

*Men*

College recreation courses (Rec. 10, 30, 40 or 150, 100, 110, 120, 140, 180, 190) . . . . .	22-23
Prescribed courses in related areas (Ed. 110; Cr. 2, Music 16; P.E. 30, 50, 59, (61, 63, 65, 67, 105, 107, (4 cr.); 71, 73, 75, 77 or 79), 101, 113; A.D. 1; Psych. 1; Soc. 2, 118; Speech 1, 4, 10, 113) . . . . .	47-48*
Prescribed Health courses (Hea. 40, 50) . . . . .	4
Prescribed foundation science courses (Zool. 1, 14; Bot. 1) . . . . .	8
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37; Phil. 1; G. & P. 1) . . . . .	24
Basic academic sequence . . . . .	9
University requirements in Basic Air Science . . . . .	4
Electives . . . . .	16
Total . . . . .	134

*Women*

College recreation courses (Rec. 10, 30, 40 or 150, 100, 110, 120, 140, 180, 190) . . . . .	22-23
Prescribed courses in related areas (Ed. 110, Cr. 2; Music 16; P.E. 30, 40, 50, 56, 58 (62, 64, 66, 68, any two; 72, 74, 76 or 78), 114; A.D. 1; Psych. 1; Soc. 2, 118; Speech 1, 4, 10, 113) . . . . .	49
Prescribed Health course (Hea. 40, 50) . . . . .	4
Prescribed foundation science courses (Zool. 1, 14; Bot. 1) . . . . .	8
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37; Phil. 1; G. & P. 1) . . . . .	24
Basic academic sequence . . . . .	9
Electives . . . . .	17
Total . . . . .	133

## MINOR IN RECREATION

18 semester hours in recreation and 6 semester hours in cognate areas.

## REQUIRED COURSES

10 hours in Rec. 30, 40, 120, 150, 170, 180, or 190; Rec. 100; Soc. 118.

6 hours of work in areas of the recreational skills—nature, arts and crafts, speech and dramatics—but *not* in the area of the student's major.

## HEALTH EDUCATION CURRICULUM

2 hours of work in the areas of swimming, sports and dance skills, (men)—P.E. 50, 59, 61, 63, 65, 67; (women)—P.E. 40, 50, 52, 54, 56, 58, 62, 64, 66, 68, 72, 74, 76, 78.

OR other courses approved by the student's adviser and the various departments involved, depending upon the student's interest and background.

### ELECTIVE COURSES

6 hours in cognate areas of sociology, psychology, etc., on approval of the student's adviser.

### RECOMMENDED ELECTIVE COURSES

Art 101, 101; C. Ed. 115, 116; Cr. 3, 5, 20, 21, 30, 31, 40, 41; Ed. 52, 147; Ind. Ed. 2, 9; Journ. 10; Music 1, 4, 5, 10, 15, 50; P.E. 180; Pr. Art 38 or 39; Psych. 121, 125, 126; R. Ed. 114; Soc. 13, 14, 62, 113, 131, 153; Speech 102, 129.

## HEALTH EDUCATION

This curriculum is designed to prepare the student to give leadership in the development of the school health education program including (1) health services, (2) healthful environment, and (3) health teaching. Graduates in this area have placement opportunities in schools, colleges, and in public and private health agencies. The minor is planned to be particularly suitable for students who are majoring in physical education, education, home economics, and childhood education.

### HEALTH EDUCATION CURRICULUM FOR MEN

FRESHMAN YEAR	Semester	
	I	II
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life .....	3	..
G. & P. 1—American Government .....	..	3
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking .....	2	..
Hea. 10—Orientation to Health Education .....	..	1
Hea. 30—Introduction to Physical Education, Rec., & Health .....	2	..
P. E. 1—Orientation to Physical Education .....	1	..
P. E. 3—Developmental and Combative Sports .....	..	1
Chem. 11, 13—General Chemistry .....	3	3
A. S. 2, 3—Basic Air Science .....	2	2
Electives .....	1	1
Total .....	16	18



# HEALTH EDUCATION CURRICULUM

	Semester	
	I	II
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Hea. 40—Personal and Community Health .....	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	1	..
P. E. 5—Team Sports and Aquatics .....	1	..
P. E. 7—Recreational Activities .....	..	1
Electives .....	3	1
Total .....	17	16
<b>JUNIOR YEAR</b>		
Microb. 1—General Microbiology .....	4	..
Microb. 108—Epidemiology and Public Health .....	..	2
Nut. 20—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or	..	..
Hea. 180—Measurement in Physical Education and Health .....	2-3	..
Hea. 110—Introduction to School Education .....	2	..
Hea. 120—Methods & Materials in Health Education .....	..	3
Ed. 110—Human Development and Learning .....	6	(6)
Psych. 1—Introduction to Psychology .....	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives .....	3	4
Total .....	?	?
<b>SENIOR YEAR</b>		
Hea. 140—Curriculum, Instruction and Observation .....	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School	..	..
Health Education .....	3	..
Ed. 145—Principles and Methods of Secondary Education .....	3	..
Ed. 148—Student Teaching in Secondary Schools <sup>1</sup> .....	8	..
Electives .....	..	14
Total .....	17	17

<sup>1</sup> When Ed. 148 is taken, Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently. This may be done either semester.

HEALTH EDUCATION CURRICULUM

HEALTH EDUCATION CURRICULUM FOR WOMEN

	Semester	
	I	II
FRESHMAN YEAR		
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life .....	3	..
G. & P. 1—American Government .....	..	3
Zool. 1—General Zoology .....	..	4
Speech 7—Public Speaking .....	2	..
Hea. 10—Orientation to Health Education .....	..	1
Hea. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 2, 4—Orientation Activities, Swimming .....	1	1
Chem. 11, 13—General Chemistry .....	3	3
Electives .....	3	3
Total .....	17	18
SOPHOMORE YEAR		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Hea. 40—Personal and Community Health .....	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 6, 8—Dance, Sports .....	1	1
Electives .....	3	3
Total .....	17	18
JUNIOR YEAR		
Microb. 1—General Microbiology .....	4	..
Microb 108—Epidemiology and Public Health .....	..	2
Nut. 20—Elements of Nutrition .....	..	3
Ed. 50—Educational Measurement or Hea. 180—Measurement in Physical Education and Health	2-3	..
Hea. 110—Introduction to School Health Education .....	2	..
Hea. 120—Methods and Materials in Health Education .....	..	3
Hea. 110—Introduction to School Health Education .....	2	..
Psych. 1—Introduction to Psychology .....	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives .....	3	4
Total .....	?	?

## HEALTH EDUCATION CURRICULUM

SENIOR YEAR	Semester	
	I	II
Hea. 140—Curriculum, Instruction and Observation .....	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health Education .....	3	..
Ed. 145—Principles of High School Teaching .....	3	..
Ed. 148—Student Teaching in the Secondary School <sup>1</sup> .....	8	..
Electives .....	..	14
Total .....	17	17

### REQUIREMENTS FOR DEGREE IN HEALTH EDUCATION

Requirements for the Bachelor of Science degree in health education in the College of Physical Education, Recreation, and Health are as follows:

Men	Sem. Cr.
Foundation science courses (Zool. 1, 14, 15; Microb. 1, 108; Chem. 11, 13) .....	24
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1) .....	24
Other specified requirements (Speech 7; Psych. 1, 5; Nut. 20) .....	11
Professional Health Education courses (Hea. 10, 30, 40, 50, 70, 110, 120, 140, 150; Ed. 150, or Hea. 180; Hea. 190) .....	29
Education courses (Ed. 110; Ed. 145, 148) .....	17
University requirements in Basic Air Science .....	4
University requirements in physical activity (P.E. 1, 3, 5, 7) .....	4
Electives .....	21
Total .....	134

#### Women

Foundation science courses (Zool. 1, 14, 15; Microb. 1, 108; Chem. 11, 13) .....	24
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1) .....	24
Other specified requirements (Speech 7; Psych. 1, 5; Nut. 20) .....	11
Professional Health Education courses (Hea. 10, 30, 40, 50, 70, 110, 120, 140, 150; Ed. 150, or Hea. 180; Hea. 190) .....	29
Education courses (Ed. 110; Ed. 145, 148) .....	17
University requirements in physical activity (P.E. 2, 4, 6, 8) .....	4
Electives .....	21
Total .....	130

<sup>1</sup> When Ed. 148 is taken Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently. This may be done either semester.

## MINORS

### MINOR IN HEALTH EDUCATION

12 semester hours in health education and 12 semester hours in related areas.

### REQUIRED COURSES

Hea. 2 and/or 4; Hea. 40 (women); Hea. 40 (men); Hea. 50 (1), Hea. 110 (2), Hea. 120 (3) and Hea. 150 (3).

### ELECTIVE COURSES IN RELATED AREAS

6 semester hours of biological sciences and 6 semester hours of psychology or human development.

### MINOR IN SAFETY EDUCATION

Students wishing to obtain a minor in safety education and become certified to teach Safety and Driver Education in junior and senior high schools should take the following courses: Hea. 50 (1), Hea. 60 (2), Hea. 70 (3), Hea. 80 (3), Hea. 105 (3), and Hea. 145 (3); F.P. 104 (3), 105 (3).

## MINORS IN OTHER AREAS

It is relatively easy for any student majoring in one curriculum of this College to complete the requirements for a minor in a cognate area of the College, as indicated after each major curriculum. Those who plan to teach in the public schools might wish to also qualify in an academic area. This is more difficult with the limited number of elective credits and must be planned carefully in advance. If it seems advisable, the Dean may waive certain required courses to allow development of a needed minor, or the student may be able to carry a heavier load than normal if his grade average permits.

Students majoring in physical education or health education should begin preparing for a teaching minor in a subject matter area during the sophomore year, if possible. Many opportunities exist in junior and senior high schools for a combination teacher of physical education and/or coach and a teacher of science, mathematics, history, etc. For a teaching minor, Ed. 140 should be taken in the minor field and student teaching should be split between the major and minor fields.

### ENGLISH MINOR

--

A minor in English requires 26 semester hours. It includes 12 semester hours of composition and literature, 3 semester hours of advanced American literature, and 11 hours of electives. Electives must be chosen with



the approval of the adviser and with the recommendations of the English Department.

### MATHEMATICS MINOR

For a minor in this area, 19 semester hours are required including the following courses: Math. 3—Fundamentals of Mathematics (4); Math. 18—Introductory Analysis (3); Math. 19—Elementary Analysis (4), and Math. 20, 21—Calculus (4, 4). Electives in mathematics are selected with the advice of the adviser.

### PSYCHOLOGY MINOR

For a minor in Psychology at least 21 semester hours are required. The student should select either the biological or the sociological approach to this minor.

- A. Biological: Psychology 1, Introduction to Psychology (3); Psychology 26, Developmental Psychology (3); Psychology 90, Statistical Methods in Psychology (3); Psychology 145, Experimental Psychology—Sensory Processes (4); Psychology 146, Experimental Psychology—Learning, Motivation and Problem Solving (4); Psychology 148, Psychology of Learning (3); Psychology 180, Physiological Psychology (3).
- B. Sociological: Psychology 1, Introduction to Psychology (3); Psychology 5, Personality and Adjustment (3); Psychology 21, Social Psychology (3); Psychology 26, Developmental Psychology (3); Psychology 90, Statistical Methods in Psychology (3); Psychology 147, Experimental Psychology—Social Behavior (4); Psychology 148, Psychology of Learning (3).

### SOCIAL SCIENCE MINOR

For a minor in this group, 24 semester hours are required as follows: History, 18 semester hours (including one year each of American and European history), economics, sociology, government, consumer education or geography, 6 semester hours.

### SCIENCE MINORS

- A. General Science: 30 semester hours are required for a minor in general science including the following courses: Chem. 1, 3, General Chemistry (4, 4); Zool. 1, General Zoology (4); Bot. 1, General Botany (4); Phys. 1, 2, Elements of Physics (3, 3) or Phys. 10, 11, Fundamentals of Physics (4, 4). The remaining 6 or 8 semester hours will be chosen subject to the approval of the student's major adviser and of the science department in which his interest lies. Zool. 14 and 15 (4, 4) are approved courses.

## PHYSICAL THERAPY CURRICULUM

- B. Biological Minor: 20 semester hours are required for a biological minor and will include the following courses: Zool. 1, General Zoology (4), Zool. 14, and 15, Human Anatomy and Human Physiology (4, 4); Chem. 1, General Chemistry (4); Bot. 1, General Botany (4).
- C. Minors of 20 semester hours are also offered in chemistry and physics. A minor in physics must be supported by a one-year course in chemistry. A minor in chemistry must be supported by a one-year course in physics. Other courses will be chosen subject to the approval of the student's major adviser and the science department in which the student's interest lies.

## SOCIOLOGY MINOR

For a minor in Sociology at least 18 semester hours are required as follows: Sociology 1, Sociology of American Life (3); Sociology 2, Principles of Sociology (3); three semester hours chosen from Sociology 112, Rural-Urban Relations (3), Sociology 114, The City (3), Sociology 118, Community Organization (3); either Sociology 5, Anthropology (3) or Sociology 105, Cultural Anthropology (3); three semester hours chosen from a social psychology group—Sociology 141, Sociology of Personality (3), Sociology 145, Social Control (3), Sociology 180, Small Group Analysis (3); and three semester hours from an applied sociology group—Sociology 111, Sociology of Occupations and Careers (3), Sociology 115, Industrial Sociology (3), Sociology 116, Military Sociology (3), Sociology 121, Population (3), Sociology 131, Introduction to Social Service (3), 147, Sociology of Law (3), Sociology 153, Juvenile Delinquency (3), Sociology 186, Sociological Theory (3).

## SPEECH MINOR

A minor of 22 semester hours is offered in speech. The minimum requirements for this minor are 12 semester hours in addition to the 10 semester hours of departmental requirements in Speech 1, 2, 3, and 4. The 12 semester hours above the departmental requirements must include 6 semester hours of courses numbered 100 or higher. All program for minors must be approved by the departmental adviser.

## PHYSICAL THERAPY

This course of study as offered by the University of Maryland is approved by the Council on Medical Education and Hospitals of the American Medical Association in collaboration with the American Physical Therapy Association and prepares the student to meet the qualifications for licensure of physical therapists.

The first two years of the curriculum are planned as studies in liberal arts and specific sciences, which are basic for courses taken in the last two

## PHYSICAL THERAPY CURRICULUM

years of specialization. The freshman and sophomore years are taken on the campus of the University of Maryland at College Park. The junior and senior years are taken on the campus of the University of Maryland at Baltimore, Department of Physical Therapy, School of Medicine. After completion of the senior year three additional months of supervised clinical experience are necessary in order to meet the national requirements for accreditation in this specialty. Upon the satisfactory fulfillment of the four year course a Bachelor of Science degree is awarded by the College of Physical Education, Recreation, and Health. At the satisfactory completion of the required months of clinical experience a Certificate of Proficiency in Physical Therapy is granted by the School of Medicine. For more detailed information, write to Head of the Department of Physical Therapy, School of Medicine, University of Maryland, Baltimore 1, Maryland.

### FRESHMAN AND SOPHOMORE PROGRAM— COLLEGE PARK CAMPUS

	Semester	
	I	II
<b>FRESHMAN YEAR</b>		
Eng. 1, 2—Composition and American Literature .....	3	3
Chem. 1, 3—General Chemistry .....	4	4
Zool. 1, 2—General Zoology, The Animal Phyla .....	4	4
Math. 10, 11—Introduction to Mathematics .....	3	3
Speech 7, 10—Public Speaking, Group Discussion .....	2	2
A. S. 2, 3—Basic Air Science .....	2	2
P. T. 10, 11—Physical Therapy Orientation .....	0	0
Physical Activities .....	1	1
Electives .....	1-2	1-2
Total .....	19	19
<b>SOPHOMORE YEAR</b>		
Eng. 3, 4—Composition and World Literature .....	3	3
Phys. 10, 11—Fundamentals of Physics .....	4	4
Zool. 20—Vertebrate Embryology .....	..	4
G. & P. 1—American Government .....	3	..
Psych. 1—Introduction to Psychology .....	3	..
Soc. 1—Sociology of American Life <sup>1</sup> .....	..	3
P. T. 20, 21—Foundations of Physical Therapy .....	1	1
Physical Activities .....	1	1
Electives .....	1-3	1-3
Total .....	16	17

<sup>1</sup> May substitute Phil. 1, Econ. 31, or Econ. 37.

# PHYSICAL THERAPY CURRICULUM

## JUNIOR YEAR

	Semester	
	I	II
Physiol. 142—General Physiology .....	..	5
Anat. 103 (a) & (b)—Human Anatomy .....	5½	3
Path. 105—Pathology .....	..	2
P. T. 106 (a) & (b)—Professional Relation, Ethics and Clinical Observation .....	½	½
P. T. 107, 108—Physical Therapy Theory and Technique I & II .....	2½	1½
P. T. 110 (a) & (b)—Principles of Physical Therapy Applied to Medical and Surgical Conditions .....	1½	1
P. T. 155—Nursing Procedures Related to Physical Therapy H. 5, 6—History of American Civilization .....	1½	..
Psych. 110—Educational Psychology .....	3	3
Psych. 5—Personality and Adjustment .....	3	..
	..	3
Total .....	17½	19

## SENIOR YEAR

Psych. 161—Psychology of the Handicapped .....	1	..
P. T. 102—Physiology of Exercise .....	1	..
P. T. 104—Functional Anatomy .....	2½	..
P. T. 151—Therapeutic Exercise .....	5	..
P. T. 152—Rehabilitation .....	..	3
P. T. 153—Physical Therapy Theory and Technique III .....	3	..
P. T. 154—Interprofessional and Social Agencies Correlation .....	..	1
P. T. 156—Current Literature .....	..	1
P. T. 157—Administration and Clinical Observation .....	..	1
P. T. 158 (a) & (b)—Clinical Experience .....	1	5
P. T. 160 (a) & (b)—Principles of Physical Therapy Applied to Medical and Surgical Conditions .....	3	2
Total .....	16½	13
Clinical Experience—11 weeks, June, July and August		



## REQUIREMENTS FOR DEGREE IN PHYSICAL THERAPY

Requirements for the Bachelor of Science degree in the College of Physical Education, Recreation, and Health, major in physical therapy, are as follows:

<i>Freshman and Sophomore Program—College Park Campus</i>	<i>Sem. Cr.</i>
Biological Science Courses (Zool. 1, 2, 20)	12
Physical Science Courses (Chem. 1, 3; Phys. 10, 11)	16
Mathematics Courses (Math. 10, 11)	6
Social Science Courses (Soc. 1 or Phil. 1 or Econ. 31 or Econ. 37; G. & P. 1; Psych. 1)	9
English Courses (Eng. 1, 2, 3, 4)	12
Physical Education Courses	4
Speech Courses (Speech 7, 10)	4
Air Science Courses (A.S. 2, 3) Required of men	4
Professional Courses (P. T. 10, 11, 20, 21)	2
Total	69

*Junior and Senior Program—Baltimore Campus*

Biological Science Courses (Anat. 103; Physiol. 142)	13½
Medical Science Courses (Path. 105)	2
Social Science Courses (H. 5, 6; Psych. 5, 110, 161)	13
Professional Courses (P. T. 102, 104, 106, 107, 108, 110, 151, 152, 153, 154, 155, 156, 157, 158, 160)	37½
Total	66
Grand Total	135

To obtain junior standing, a student is required to complete the specified academic curriculum of 61 semester hour credits (excluding Physical Education activities and Air Science courses). Capable students are encouraged to take additional elective courses.

## GRADUATE STUDY

The College of Physical Education, Recreation, and Health offers course work in the areas of physical education, recreation and health education leading to the degree of Master of Arts, Doctor of Education, and Doctor of Philosophy. Persons not interested in an advanced degree may take course work for purposes of teaching certification, renewal of certification, or professional growth. Within the three major areas—physical education, recreation, and health education—special study and research are available along the following lines: (1) Physical Education—elemen-

## GRADUATE STUDY

tary, secondary, higher education and research, administration, athletics, and dance; (2) Recreation—public and municipal, industrial, hospital, youth-serving organizations and agencies, outdoor education, camp administration, and higher education and research; (3) Health Education—elementary, secondary, higher education and research, safety education, and service organizations and agencies.

## SPECIAL STUDY

Graduate students are encouraged to pursue advanced study along lines of their special interests. The wealth of research sources close to the University make such study possible. In addition, the College of Physical Education, Recreation, and Health places at the disposal of graduate students a modern, spacious, well-equipped research laboratory.

## GENERAL REGULATIONS GOVERNING GRADUATE WORK

Persons wishing to pursue graduate study must first gain admittance to the Graduate School. Application blanks for this purpose can be obtained by writing to the Dean of the Graduate School. Admittance to Graduate School entitles one to enroll in courses numbered 200 and above and to pursue course work leading to an advanced degree. Courses numbered 200 or above are graduate courses whereas courses numbered from 100 to 199 are advanced undergraduate and graduate courses. Persons not admitted to the Graduate School may enroll as special students in courses numbered under 200. To be admitted for graduate study, the applicant must:

- (1) be a graduate of an accredited college or university.
- (2) have a "B" average or its equivalent during the last two years of undergraduate work, or have demonstrated either at the University of Maryland or some other accredited institution the ability to do graduate level work, and
- (3) have the necessary prerequisite course work with a minimum of 16 semester credit hours in the subject field in which the applicant wishes to specialize.

## MASTER OF ARTS DEGREE

The Master of Arts degree is awarded for successful completion of a minimum of 30 hours of advanced study beyond the undergraduate level. The Master's degree represents more than mere class attendance. It represents professional competency and the demonstrated ability to do critical thinking.

The student seeking the Master of Arts degree must declare a major subject field and a minor subject field. Twelve to fifteen credit hours will be in the major area and nine to twelve hours, depending upon the number

in the major area, will be in the minor field. The remaining six hours are made available to the student in order that he may study, relatively intensely, any problem or topic in which he has a *special* interest. This study culminates in a written report—thesis.

The program for the Master's degree is relatively flexible with only one course, (P.E. 210), three credit hours, being required. All other course work is elective, subject to the adviser's approval. The student in conjunction with the help of an adviser works out a program of study suitable to the student's special needs and interests. Early in the graduate program, before twelve credit hours have been completed, the student takes a qualifying examination. The purpose of this examination is to help the student and adviser to discover areas of strength and weakness. This provides information needed in directing the course of study. Upon completion of all course work, including the research project, the candidate undergoes a final oral examination which is directed primarily toward the student's research.

Half-time graduate assistants working toward the Master's Degree should note that they may take only ten credit hours per semester during the fall and spring terms and six credit hours in Summer School. Consequently, a graduate assistant in order to obtain the Master's Degree, must attend the University at least three full semesters.

## THE DOCTOR OF EDUCATION DEGREE

The Doctor of Education degree is a professional degree offered in conjunction with the College of Education. Persons who are interested primarily in administrative and teaching positions in public school and related fields are encouraged to pursue this degree.

The degree is awarded for successful completion of a minimum of 90 hours of graduate credit and a demonstrated competency in the study and solution of problems related to the student's field of endeavor.

At least 30 class hours of the minimum of 90 hours must be taken on the College Park campus. The number of hours that can be transferred from another institution is subject to the decision of the Graduate Council. Each student is expected to select and carry to successful completion a research project of particular interest to him. This project is reported in the form of a thesis and may carry from six to nine hours of credit. In addition, each student must demonstrate his ability to translate German or French and Spanish. In pursuing the Doctor of Education degree, the candidate must select an area of major emphasis and one or two areas of minor emphasis. Each candidate must take certain graduate background tests, and must successfully pass the following academic examinations: a six-hour preliminary examination taken relatively early in the program, a final written comprehensive examination covering the entire graduate course of study, and a final oral or written examination directed primarily toward the research project.



## GRADUATE STUDY

### THE DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy degree is offered primarily for those persons interested in preparing themselves for positions in teaching and research on the college and university level. A *minimum* of 90 credit hours is required for this degree, plus the demonstrated ability to do scholarly work and research. At least thirty of the 90 hours must be taken on the College Park campus and the amount of credit that can be transferred from other institutions is subject to the decision of the Graduate Council. Each student must select and carry to completion a research project which may carry from 12 to 18 hours of credit. Course work must be planned on the basis of a major subject field and one or two closely related minor subject fields. In addition to class work, the student must demonstrate a reading proficiency in German and French or Spanish, and also successfully pass two examinations: (1) a comprehensive written and oral preliminary examination, and (2) a final oral and/or written examination.

### DOCTORAL RESIDENCE

The requirements of residency for both the Ed. D. and Ph. D. candidates can be fulfilled by presence on the campus for two semesters during the fall and spring terms. In unusual circumstances, the time may be prorated over more than two semesters.

### GENERAL ADVANCED STUDY

Students who are not seeking a degree, but are doing advanced study to fulfill some special need or renewal of teaching certification, are encouraged to select an adviser and to plan a program designed to help them best achieve their objectives.

### PREREQUISITES FOR ADVANCED STUDY

The course prerequisite for advanced study in each of the three areas, physical education, recreation, and health are listed below. In certain instances experience or equivalent courses may be substituted for the courses listed. Students who are deficient in only one or two subjects may be admitted on a provisional basis, with the understanding that the deficiencies will be made up as soon as possible.

The following courses, or their equivalents, are prerequisites for advanced study:

- A. Physical Education—human anatomy, physiology, history and principles of physical education, theory of exercise (physiology of exercise), kinesiology, adapted physical education, measurement, methods, activity skills, administration, practice teaching (teaching experience), and human development (educational psychology).

Note: Courses shown in the brackets above are the equivalents of the courses after which they are shown. Measurement, administration,



kinesiology and theory of exercise may be taken for graduate credit if they have not been taken on the undergraduate level. The student is expected to carry out a special research project if an advanced undergraduate course (100 level), is to carry graduate credit.

- B. Recreation—psychology, sociology, principles of recreation, administration, basic sciences, recreational skills laboratory, and practical experience.
- C. Health Education—biological sciences, bacteriology, human anatomy, physiology, chemistry, psychology, measurement, administration, principles of health, and field work.

## GRADUATE ASSISTANTSHIPS

A number of teaching and research assistantships are available to qualified individuals. These assistantships carry a stipend of \$2,000 for the academic year, and exemption from all fixed charges. Graduate assistants may carry up to ten hours of academic work. Persons interested in an assistantship should write directly to Dean L. M. Fraley, College of Physical Education, Recreation, and Health.

Persons interested in additional information concerning the graduate program should refer to the Graduate School Announcements.

# COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates.

200 to 299: courses for graduates only.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

Physical education fee per semester (to be charged any student enrolled in any physical activity course), \$6.00.

## PHYSICAL EDUCATION

### P. E. 30. INTRODUCTION TO PHYSICAL EDUCATION, RECREATION, AND HEALTH. (2)

First and second semesters. Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will become acquainted with the status and trends of each area.

### P. E. 40. BASIC BODY CONTROLS. (1)

First and second semesters. Three hours a week. Second semester arranged for benefit of transfers. Laboratory fee, \$6.00. This course is designed to acquaint the student with the fundamental principles and techniques of body movement, and to provide for practical application in sports, rhythmic and gymnastic activities. In addition, the course introduces balanced posture in standing, walking, sitting and work skills, as well as relaxation.

### P. E. 50. RHYTHMIC ANALYSIS AND MOVEMENT. (1-2)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. The development of rhythmic sensitivity through an analysis of rhythm and its application to movement. Percussion instruments will be used.

### P. E. 52, 54. DANCE TECHNIQUES. (1, 1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Introduction to techniques of modern dance, with simple approaches to composition.

### P. E. 55. ELEMENTARY SCHOOL RHYTHMIC ACTIVITIES. (2)

First and second semesters. Summer session. This course surveys the various types of rhythmic activities suitable for use in the elementary school. Basic rhythms, singing games, and folk and square dancing are considered in terms of

## PHYSICAL EDUCATION

their use at the various grade levels as well as the best accepted methods of teaching these activities.

### P. E. 56. SKILLS AND METHODS IN FOLK AND SQUARE DANCE. (1)

First and second semesters. One lecture and three laboratories a week. Laboratory fee, \$6.00. This course is designed to acquaint the student with basic skills in folk and square dance and to give theory of class organization, analysis, teaching techniques, and practice in "calling" for junior and senior high school programs.

### P. E. 57. ELEMENTARY SCHOOL SKILLS AND SELF-TESTING ACTIVITIES. (2)

First and second semesters and summer. This course surveys the various types of skills and stunt and tumbling activities suitable for use in the elementary school. These activities are considered in terms of their use at the various grade levels as well as the best accepted methods of teaching.

### P. E. 58. SKILLS AND METHODS IN SOCIAL DANCE. (1)

First and second semesters. One lecture and three laboratories a week. Laboratory fee, \$6.00. This course is designed to acquaint the student with basic skills in Social Dance and to give theory of class organization, analysis and teaching techniques for junior and senior high school programs.

### P. E. 59. SKILLS IN FOLK, SQUARE AND SOCIAL DANCE. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 50. Laboratory fee, \$6.00. This course is designed to acquaint the student with the basic skills in social, folk, and square dance for use in schools and recreational groups.

### P. E. 60. DANCE COMPOSITION. (2)

First and second semesters. Four hours a week. Laboratory fee, \$6.00. The study of dance content and relationship to form and style. Theory and laboratory problems in composition. Techniques in presenting dance materials.

### P. E. 61, 63. SKILLS LABORATORY. (2, 2)

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of skills in apparatus, calisthenics, cross-country, dual recreation activities, mass games and relays, soccer, touch football, track, tumbling, and volleyball.

### P. E. 62, 64. SKILLS LABORATORY. (2, 2)

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of seasonal sports, stunts, tumbling, and gymnastic exercises.

### P. E. 65, 67. SKILLS LABORATORY. (2, 2)

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of skills in basketball, baseball, football and wrestling.

### P. E. 66, 68. SKILLS LABORATORY. (2, 2)

First and second semesters. Six hours a week. Prerequisites, P. E. 40, 62, 64. Laboratory fee, \$6.00. Techniques of selected team and individual sports.

## PHYSICAL EDUCATION

### P. E. 69. SKILLS LABORATORY. (2)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Prerequisite, P. E. 61. Provides experience in complex gymnastic activities above the elementary phase.

### P. E. 70. INTERMEDIATE MODERN DANCE. (2)

First and second semesters. Four laboratory periods a week. Prerequisites, P. E. 52, 54 or permission of instructor. Laboratory fee, \$6.00. Modern dance techniques. Compositional problems.

### P. E. 71. ELEMENTARY SWIMMING. (1)

First and second semesters. Laboratory fee, \$6.00. Progressive techniques and practice of elementary swimming. Course includes basic and intermediate swimming instruction.

### P. E. 72. ELEMENTARY SWIMMING AND DIVING. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Progressive techniques and practice in the elementary phase of swimming and diving, designed to make the student self-sufficient in deep water.

### P. E. 73. ADVANCED SWIMMING. (1)

First and second semesters. Prerequisite, P. E. 71, or equivalent. Laboratory fee, \$6.00. Progressive techniques and practice of advanced swimming skills, water stunts and survival swimming.

### P. E. 74. INTERMEDIATE SWIMMING AND DIVING. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 72, or equivalent. Laboratory fee, \$6.00. Continuation of the techniques in P. E. 72 to include proficiency in the standard swimming strokes and the ability to perform a fully coordinated standing dive.

### P. E. 75. LIFE SAVING AND WATER SAFETY. (1)

First and second semesters. Three hours a week. Prerequisites, P. E. 73, or equivalent. Laboratory fee, \$6.00. Progressive techniques and practice of life saving and water safety skills. Course includes the Senior Life Saving material of the American Red Cross and the Y.M.C.A. It is possible to secure the American Red Cross Water Safety Instructorship through this course.

### P. E. 76. ADVANCED SWIMMING AND DIVING. (1)

First and second semesters. Three hours a week. Prerequisites, P. E. 72 and P. E. 74, or equivalent. Laboratory fee, \$6.00. Continuation of the techniques of P. E. 74, to include more advanced swimming strokes, fancy diving, water stunts, and life saving.

### P. E. 77. METHODS OF AQUATICS. (2)

First and second semesters. Three hours a week. Prerequisites, P. E. 73, or equivalent. Laboratory fee, \$6.00. This course is designed to train students for aquatic leadership in schools, camps and clubs. Course includes teaching methods, administration, facilities and equipment.

### P. E. 78. METHODS OF TEACHING AQUATICS. (2)

First and second semesters. One lecture and three laboratory hours a week. Prerequisites, P. E. 74, 76, or equivalents. This course is designed to prepare the students to teach swimming and diving, administer swimming pools, conduct recreational aquatic activities, and direct camp aquatic programs.



**P. E. 79. FANCY DIVING. (1)**

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of fancy diving. Course will include work on the five categories of dives.

**P. E. 80. ADVANCED MODERN DANCE. (2)**

First and second semesters. Four laboratory periods a week. Prerequisites, P. E. 52, 54, 70 or permission of the instructor. Laboratory fee, \$6.00. Continuation of P. E. 70 in more advanced form.

**P. E. 82, 84. OFFICIATING. (0, 0)**

First and second semesters. One lecture and two laboratory hours a week. Techniques of officiating women's sports. Opportunities to qualify for local and national ratings in hockey, basketball, volleyball and softball.

**P. E. 90. WORKSHOP. (1)**

First and second semesters. Three laboratory hours a week. Permission of instructor only. Laboratory fee, \$6.00. Planning, composition, and presentation of demonstrations. A total of 6 credits may be earned.

*For Advanced Undergraduates and Graduates \**

**\*P. E. 100. KINESIOLOGY. (4)**

First and second semesters. Summer session. Three lectures and two laboratory hours a week. Prerequisites, Zool. 1, 14, and 15, or the equivalent. The study of human movement and the physical and physiological principles upon which it depends. Body mechanics, posture, motor efficiency, sports, the performance of atypical individuals, and the influence of growth and development upon motor performance are studied.

**P. E. 101, 103. ORGANIZATION AND OFFICIATING IN INTRAMURALS. (1, 1)**

First and second semesters. Six hours a week. Organizations, administration, and promotion of intramurals at various school levels. Types of tournaments, units of competition, handling of student leader personnel, etc.

**P. E. 105, 107. SKILLS LABORATORY. (1, 1)**

First and second semesters. Four hours a week. Laboratory fee, \$6.00. Prerequisite, junior standing. Open to male students preparing for teaching. Experience in individual and dual neuro-muscular sports skills for the physical education major student.

**P. E. 110. DANCE PRODUCTION. (3)**

First and second semesters. Prerequisites, P. E. 52, 54, 60, 70, 80, or equivalent. Planning of group and individual choreography. Aspects of dance production such as staging costumes, make-up for dancers, acquainting the student with elements of dance and theatre. Demonstration planning.

**P. E. 113. METHODS AND MATERIALS FOR SECONDARY SCHOOLS. (3)**

First and second semesters. Prerequisite, P. E. 30, 50, 60, 61, 63, 65, 67. This

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

## PHYSICAL EDUCATION

course is designed to help the student acquire a knowledge of the application of methods which directly or indirectly influence teacher-pupil learning situations in physical education at the secondary school level. Students will be required to arrange time to work with a staff physical education instructor in order to gain some practical teaching experience. Class activities include discussions, reports, outside readings, and teaching demonstrations.

- P. E. 115. METHODS AND MATERIALS FOR SECONDARY SCHOOLS. (1)**  
Second semester. Three laboratory hours per week arranged. Prerequisite, P. E. 113. This is a laboratory course designed to help the student acquire practical experience in the courses of the University required program. The student will be given the opportunity to observe and assist in teaching under the direct supervision of a regular staff member.
- P. E. 114, 116. METHODS IN PHYSICAL EDUCATION FOR SECONDARY SCHOOLS. (3, 1)**  
First and second semesters. Three lectures a week. Prerequisites, P. E. 40, 62, 64, 66, 68. Application of educational philosophy and principles to class organization and teaching techniques in individual sports, recreational games, gymnastics, body mechanics, dance, and relaxation for junior and senior high school programs.
- \*P. E. 120. PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL. (3)**  
First and second semesters. Summer session. This course is designed to orient the general elementary teacher to physical education. Principles and practices in elementary physical education will be presented and discussed and a variety of appropriate activities will be considered from the standpoint of their use at the various grade levels.
- P. E. 123, 125. COACHING ATHLETICS. (3, 3)**  
First and second semesters. Two lectures and two laboratory hours a week. Methods of coaching the various competitive sports commonly found in high school and college programs.
- P. E. 124, 126. PRACTICUM IN LEADERSHIP. (2, 2)**  
First and second semesters. One lecture and one three hour laboratory period a week. Prerequisite, permission of instructor. This course is designated to prepare the student for the teaching experience by assisting in non-professional University classes. It also provides guidance in methods and materials of teaching in the junior and senior high schools.
- P. E. 130. FUNDAMENTALS OF BODY DYNAMICS. (3)**  
First and second semesters. Summer session. This course is designed to acquaint the elementary teacher with the scientific principles of mechanical-anatomical analysis and physiology of activities as they relate to physical growth and development.
- P. E. S131. COACHING BASKETBALL. (2)**  
Summer only. Methods of coaching basketball in high school and college.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

**P. E. S133. COACHING FOOTBALL. (2)**

Summer only. Methods of coaching football in high school and college.

**P. E. 135. COACHING SWIMMING AND DIVING. (2)**

First and second semesters. Three hours a week. Laboratory fee, \$6.00. A thorough analysis of the techniques of coaching swimming and diving. Course includes a systematic treatment of the philosophy, historical development and psychological theories of coaching aquatics.

**P. E. 140. CURRICULUM, INSTRUCTION AND OBSERVATION. (3)**

First and second semesters. Prerequisite, men—P. E. 113; women—P. E. 114, 116, 124, 126. A course designed to provide directed observations and discussion coordinating these experiences with those from previous methods courses in the development of curriculums for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health and physical education programs in junior and senior high schools. This course must be taken during the semester in which the student is doing student teaching.

**\*P. E. 155. PHYSICAL FITNESS OF THE INDIVIDUAL. (3)**

First and second semesters. Summer session. A study of the major physical fitness problems confronting the adult in modern society. Consideration is given to the scientific appraisal, development and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. This course is open to persons outside the fields of Physical Education and Health.

**\*P. E. 160. THEORY OF EXERCISE. (3)**

First and second semesters. Summer session. Two lectures and two laboratory hours a week. Prerequisite, Zool. 1, 14, and 15, and P. E. 100 or the equivalent. A study of exercise and its physiological and kinesiological bases. Special emphasis is placed upon the application of exercise to the development and maintenance of physical efficiency. Corrective therapy, conditioning for athletics, the effects of exercise and training on the human organism, fatigue, staleness, relaxation, and the nature of athletic injuries are investigated.

**\*P. E. 170. SUPERVISION IN ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)**

First and second semesters. Summer session. Prerequisite, P. E. 120. Principles and techniques of supervision are studied from a standpoint of their application in improving the learning situation in elementary school physical education. Strong emphasis will be given to the concept that modern supervision in elementary school physical education should be based on the application of fundamental democratic principles.

**\*P. E. 180. MEASUREMENT IN PHYSICAL EDUCATION AND HEALTH. (3)**

First and second semesters. Summer session. Two lectures and two laboratory periods a week. Prerequisite, placement in Group 1 or 2 on Mathematics Entrance test or Math. 0. The application of the principles and techniques of educational measurement to the teaching of health and physical education;

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.



## PHYSICAL EDUCATION

study of the functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

### P. E. 181. ADVANCED TRAINING AND CONDITIONING. (3)

Second semester. Two lectures and two laboratory hours a week. Prerequisites, Zool. 14, 15; P. E. 100. The training and physical conditioning of athletics. Treatment of athletic injuries by taping, massage, hydro-therapy, physical therapy, and electro-therapy. Remedial and conditioning exercises. Theory and practice.

### \*P. E. 182. HISTORY OF DANCE. (3)

First and second semesters. The development of dance from primitive to modern times and the relationship of dance forms to patterns of culture. A historical survey of the changing place of dance in civilization. Research problems.

### \*P. E. 184. THEORY AND PHILOSOPHY OF DANCE. (3)

First and second semesters. The study of the basic theories and philosophies of dance. Investigation of form, content and structure in dance and in relationship to other arts. The role of dance in education.

### \*P. E. 189. FIELD LABORATORY PROJECTS AND WORKSHOP. (1-6)

First and second semesters. Summer session. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., Rec., Hea., or Ed. 189 is six.

### \*P. E. 190. ADMINISTRATION AND SUPERVISION OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

First and second semesters. Summer session. The application of the principles of administration and supervision to Physical Education, Recreation, and Health. This course must be taken during the semester in which the student is doing student teaching.

### \*P. E. 191. THE CURRICULUM IN ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)

First and second semesters. One lecture and two laboratory hours per week. Techniques planning and construction is considered from a standpoint of valid criteria for the selection of content in elementary school physical education. Desirable features of cooperative curriculum planning in providing for learning experiences will be presented and discussed.

### P. E. 192. PERCUSSION ACCOMPANIMENT AND MUSIC FOR DANCE. (2)

First and second semesters. One lecture and two laboratory hours per week. Techniques of percussion playing and its use as dance accompaniment are emphasized. Learning to use the instruments in composition and improvisation is stressed. Music for dance. Percussion scores.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.



**\*P. E. 195. ORGANIZATION AND ADMINISTRATION OF ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)**

First and second semesters. Summer session. Prerequisite, P. E. 120. This course considers the procedures which are basic to the satisfactory organization of all phases of the elementary school physical education program. Stress will be placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. Strong emphasis will be placed on organization and administration from a standpoint of adapting the program to specific situations.

**\*P. E. 196. QUANTITATIVE METHODS. (3)**

First and second semesters. Summer session. A course covering the statistical techniques most frequently used in research pertaining to Physical Education, Recreation, and Health Education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

*For Graduates*

**P. E. 200. SEMINAR IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (1)**

First and second semesters. Summer session.

**P. E. 201. FOUNDATIONS IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

First and second semesters. Summer session. A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

**P. E. 202. STATUS AND TRENDS IN ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)**

First and second semesters. Summer session. An analysis of the current status and implications for future trends in physical education at the elementary school level. Open to experienced persons in all phases of education.

**P. E. 203. SUPERVISORY TECHNIQUES IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

First and second semesters. Summer session. A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

**P. E. 204. PHYSICAL EDUCATION AND THE DEVELOPMENT OF THE CHILD. (3)**

First and second semesters. Summer session. An analysis of the place of physical education in meeting the growth and developmental needs of children of elementary school age.

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\*Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

## PHYSICAL EDUCATION

### P. E. 205. ANALYSIS OF CONTEMPORARY ATHLETICS. (3)

First and second semesters. Summer session. A study of current problems, practices and national issues of permanent importance to the conduct of athletic competition in a democracy.

### P. E. 210. METHODS AND TECHNIQUES OF RESEARCH. (3)

First and second semesters. Summer session. A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

### P. E. 215. PRINCIPLES AND TECHNIQUES OF EVALUATION. (3)

First and second semesters. Summer session. Prerequisite, an introductory course in measurement or permission of the instructor. A study of currently used means of evaluating the performance of students and the effectiveness of programs of physical education in schools and colleges. Specific problems concerning evaluation, brought in by members of the class, will be analyzed.

### P. E. 230. SOURCE MATERIAL SURVEY. (3)

First and second semesters. Summer session. A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

### P. E. 250. MENTAL AND EMOTIONAL ASPECTS OF SPORTS AND RECREATION. (3)

First and second semesters. Summer session. Prerequisites, psychology and/or human development. An exploration of psychological aspects of physical education, sports and recreation, including personality dynamics in relation to exercise and sports, psychological factors in athletic performance and coaching, and applications of principles of motor learning.

### P. E. 275. ADVANCED ANALYSIS OF HUMAN MOTION. (3)

First and second semesters. Summer session. Prerequisites, P. E. 100, 160, College algebra or equivalent or by permission of instructor. A research oriented kinesiological analysis of human movement as it relates to sports and the activities of daily living. The analysis is accomplished by means of various measurement procedures including cinematography, electronic timing devices and similar instruments.

### P. E. 280. SCIENTIFIC BASES OF EXERCISE. (3)

First and second semesters. Summer session. Prerequisites, Anatomy, Physiology, P. E. 100, 160, or equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

### P. E. 287. ADVANCED SEMINAR. (1-2)

First and second semesters. Summer session. Prerequisite, P. E. 201, or Hea. 220, or equivalent, or permission of the instructor. This course is a study of the current problems and trends in the selected fields of Physical Education, Recreation, and Health.

**P. E. 288. SPECIAL PROBLEMS IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (1-6)**

First and second semesters. Summer session. Master or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

**P. E. 290. ADMINISTRATIVE DIRECTION OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

First and second semesters. Summer session. This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

**P. E. 291. CURRICULUM CONSTRUCTION IN PHYSICAL EDUCATION AND HEALTH. (3)**

First and second semesters. Summer session. A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

**P. E. 399. RESEARCH—THESIS. (1-5)**

First and second semesters. Summer session. Students who desire credits for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

## RECREATION

**REC. 10, 11. RECREATION ORIENTATION. (0, 0)**

First and second semesters. Through occasional class sessions and attendance at various meetings on and off campus, those majoring in recreation will have an opportunity to become acquainted with their fellow students, with the organizations in the field, their leaders and activities, and with the broad scope of recreation and its various divisions and interests.

**REC. 30. HISTORY AND INTRODUCTION TO RECREATION. (2)**

First and second semesters. An introduction to the beginnings, growth, and possibilities in recreation as presently fostered by individuals, agencies and governments; attitudes toward and theories of play; historical events and figures; present principles and objectives; organizations and groups interested in recreation, and their relationships; job opportunities, specifications and demands; self analysis of individual student interests, limitations and capabilities in light of these specifications and demands.

**REC. 40. CAMP COUNSELING AND ADMINISTRATION. (2)**

First and second semesters. A study of the philosophy and techniques of camp counseling including the qualifications, responsibilities and skills involved; the basic organization, administration and program planning practices and problems of camping as a whole; the relationship of these practices and problems to the counselor and his or her probable success. Outdoor skills will be taught and practiced insofar as possible.



## RECREATION

### *For Advanced Undergraduates and Graduates \**

#### **REC. 100. CO-RECREATIONAL GAMES AND PROGRAMS. (2)**

First and second semesters. Summer session. Compilation and sampling of the techniques for use in low organization and party games and activities. Emphasis is placed upon those activities of value to a recreation leader or teacher, and upon the placement, sequence and variation of such activities for all age levels and interests.

#### **REC. 110. NATURE LORE. (1-2)**

Second semester. An overall orientation course conducted in conjunction with the National Park Service of Washington, D.C., and covering various of the areas of physical and biological sciences; rocks, trees, animals, birds, flowers, etc. Two credits will be granted those students completing the maximum requirements of the course including local evening lectures, Saturday and/or Sunday observations, the Saturday Outdoor Leadership Workshop (24 hours), and periodic class meetings held at the University of Maryland.

#### **\*REC. 120. PROGRAM PLANNING. (3)**

First and second semesters. Prerequisite, Rec. 30 or 170. Study of the various aspects, problems and practices of family, agency and governmental recreation programs and their planning, with particular emphasis on playground-community and teen-age center plans and procedures. This course should be of interest and value to those students planning to do part-time summer playground work.

#### **REC. 140. OBSERVATION AND FIELD WORK IN RECREATION. (5)**

First and second semesters. Included are observation and field work at various of the facilities available; particular emphasis will be placed on whatever observations may be needed to complete coverage of the various opportunities; field work opportunities themselves will be selected and assigned on the basis of student interest and future job plans.

#### **\*REC. 150. CAMP MANAGEMENT. (3)**

First and second semesters. Summer session. An advanced camping course for those students with previous training and experience; organization, administration, programing, current trends, evaluation, and special problems. Whenever possible, visiting specialists and field trips will be included.

#### **REC. 170. GENERAL FUNDAMENTALS OF RECREATION. (3)**

First and second semesters. This course is designed for students not majoring in recreation who wish to develop some understanding of the place, importance and potentialities of recreation in modern life. Included will be limited study of the areas of philosophy, program planning, personality and leadership techniques, organization and administration, and interrelationships with other fields.

#### **\*REC. 180. LEADERSHIP TECHNIQUES AND PRACTICES. (3)**

First and second semesters. A study of the various kinds of levels of leadership exerted by professional and semi-professional workers, some of the difficulties and probable weaknesses to be met, and some of the tangible techniques to be used in personnel, staff, and public relationships; handling of problem children, of personnel, of public relations campaigns, committee gatherings, etc. The group work approach will be emphasized and used, insofar as possible, in the solution

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.



of particular problems that grow out of practical experiences in handling on and off campus groups.

**REC. S184. OUTDOOR EDUCATION. (6)**

Summer only. A full-time program for teachers, administrators, recreation leaders, and social workers in functionalized child development through utilization of the surrounding natural environment and resources. Guided group work implements the acquired techniques for use with children in developing education in democratic living, worthy use of leisure, certain character traits and also for vitalizing such subject-matter areas as mathematics, language arts, social and natural sciences, music, health and physical education, graphic and plastic arts.

**\*REC. 185. PLANNING, DESIGN AND MAINTENANCE OF PARK AND RECREATION AREAS AND FACILITIES. (3)**

First and second semesters. A study of the relation of the park and recreation system to the total community plan of development; area layout, design and maintenance of facilities based on survey technique. Field experience will include the conducting of actual community surveys as requested by various community groups. The development of such studies will include inspection of areas, site analysis, preparation of plans and presentation to the community.

**\*REC. 189. FIELD LABORATORY PROJECTS AND WORKSHOP. (1-6)**

First and second semesters. Summer session. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., Rec., Hea., or Ed. 189 is six.

**\*REC. 190. ORGANIZATION AND ADMINISTRATION OF RECREATION. (3)**

First and second semesters. Summer session. A study of the organizational patterns and administrative problems involved in the various kinds of operating recreation groups and agencies; forms of organization; finance and budget; personnel; areas, facilities, and equipment; public relations.

**\*REC. 196. QUANTITATIVE METHODS. (3)**

First and second semesters. Summer session. A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

*For Graduates*

**REC. 200. SEMINAR IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (1)**

First and second semester. Summer session.

**REC. 201. FOUNDATIONS OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

First and second semesters. Summer session. A study of history, philosophy and principles of Physical Education, Recreation and Health as applied to current problems in each area and as related to general education.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

## RECREATION

### REC. 202. PHILOSOPHY OF RECREATION. (2)

First and second semesters. Summer session. A study of the meanings, relationships, and services of recreation as expressed by past and present authorities and leaders. This course should be of interest to people active in education, social work and related fields.

### REC. 203. SUPERVISORY TECHNIQUES IN PHYSICAL EDUCATION, RECREATION AND HEALTH. (3)

First and second semesters. Summer session. A study of current concepts, principles and techniques of supervision and their application to the special fields indicated: observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

### REC. 204. MODERN TRENDS IN RECREATION. (3)

First and second semesters. Summer session. A study of emphasis and recent developments in the recreation field as a whole and within its various specialized areas, making particular reference to the current and new literature.

### REC. 210. METHODS AND TECHNIQUES OF RESEARCH. (3)

First and second semesters. Summer session. A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

### REC. 230. SOURCE MATERIAL SURVEY. (3)

First and second semesters. Summer session. A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

### REC. 240. INDUSTRIAL RECREATION. (3)

First and second semesters. Summer session. An introductory study of the philosophy of and practices and problems in industrial recreation. Where possible the course will include opportunities for observation and visiting specialists.

### REC. 260. HOSPITAL RECREATION. (3)

First and second semesters. Summer session. An introductory study of the philosophy of and practices in hospital and institutional recreation. Where possible the course will include opportunities for observation and visiting specialists.

### REC. 287. ADVANCED SEMINAR. (1-2)

First and second semesters. Summer session. Prerequisites, P. E. 201, Hea. 201, Rec. 201, or Hea. 220, or permission of the instructor. This course is a study of the current problems and trends in the selected fields of physical education, recreation and health education.

### REC. 288. SPECIAL PROBLEMS IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (1-6)

First and second semesters. Summer session. Master or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

### REC. 290. ADMINISTRATIVE DIRECTION OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

First and second semesters. Summer session. This course is devoted to the analysis of administrative problems in the light of sound educational practice.

## HEALTH EDUCATION

Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

### REC. 399. RESEARCH—THESIS. (1-5)

First and second semesters. Summer session. Students who desire credits for a master's thesis, a doctoral dissertation, or doctoral projects should use this number.

## HEALTH EDUCATION

### HEA. 10. ORIENTATION TO HEALTH EDUCATION. (1)

First and second semesters. This course explores the field of health education in both the school and the community from the point of view of the health educator. Professional preparation and career opportunities are considered.

### HEA. 30. INTRODUCTION TO PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

First and second semesters. Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will be acquainted with the status and trends of each area.

### HEA. 40. PERSONAL AND COMMUNITY HEALTH. (3)

First and second semesters. Meaning and significance of physical, mental and social health as related to the individual and to society; important phases of national health problems; constructive methods of promoting health of the individual and the community; health problems of college students and young people with special emphasis on health knowledge for the future teacher.

### HEA. 50. FIRST AID AND SAFETY. (1)

First and second semesters. Standard and Advanced American Red Cross courses in first aid; safety in physical activities.

### HEA. 60. ADVANCED FIRST AID. (2)

First and second semesters. Opportunity to secure Red Cross Advanced and Instructor's Certificate.

### HEA. 70. SAFETY EDUCATION. (3)

First and second semesters. A study of the causes of accidents and methods of prevention, including principles of traffic and industrial safety.

### HEA. 80. THE DRIVER, HIS CHARACTERISTICS AND IMPROVEMENT. (3)

First and second semesters. Summer session. Prerequisites, Hea. 50. The aim of this study is to treat the driver-behavior problem in its relation to many of the psycho-physical factors and forces in the traffic environment that impinge upon the man behind the wheel.

*For Advanced Undergraduates and Graduates \**

### HEA. 105. BASIC DRIVER EDUCATION. (3)

First and second semesters. Summer session. Prerequisites, Hea. 50, 60, 70, 80.

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\*Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.



## HEALTH EDUCATION

This course is a study of the place of the automobile in modern life and deals with the theory and practice of the following: traffic accidents and other traffic problems; objectives and scope of 'driver-education; motor vehicle laws and regulations; basic automobile construction and maintenance from the standpoint of safety, methods in classroom instruction; aids to learning and practice driving instruction.

### HEA. 110. INTRODUCTION TO SCHOOL HEALTH EDUCATION. (2)

Second semester. Summer session. Prerequisites, Hea. 2 and 4, or Hea. 40. This course deals with many aspects of school and community health programs, and the backgrounds and history of the services studied with their relationships to each other directly and indirectly. Various phases of healthful living are discussed as a part of school and community health. Special emphasis is placed upon the health service of both programs.

### HEA. 120. METHODS AND MATERIALS IN HEALTH EDUCATION. (3)

First semester. Prerequisite, Hea. 40 or equivalent. This course considers various plans of teaching health in schools and elsewhere. Health education teaching methods and materials are evaluated with regard to their application to practical situations.

### HEA. 140. CURRICULUM, INSTRUCTION AND OBSERVATION. (3)

First and second semesters. Summer session. Prerequisites, Hea. 40, 110, 120. A course designed to provide directed observation and discussion, coordinating these experiences with those from previous methods courses in the development of curricula for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health and physical education programs in junior and senior high schools. This course must be taken during the semester in which the student is doing teaching.

### HEA. 145. ADVANCED DRIVER EDUCATION. (3)

First and second semesters. Summer session. Prerequisites, Hea. 50, 60, 70, 80, 105. Progressive techniques, supervision, and practice of advanced driver-education; comprehensive programming for traffic safety; psychology of traffic safety; improving the attitudes of young drivers; teaching to meet driving emergencies; program planning in driver-education; consumer education; resources and agencies; the teacher and driver-education; measuring and evaluating results; driver-education for adults; new developments in driver-education; insurance and liability, and the future of driver-education.

### \*HEA. 150. HEALTH PROBLEMS OF CHILDREN AND YOUTH. (3)

First and second semesters. Summer session. This course involves a study of the health needs and problems of pupils from the primary grades through high school. Physical, mental, and psychosomatic aspects of health are considered in relation to the developmental and school levels. Consideration is given to such topics as: diet selection and control; exercise, recreation and rest; emotional upset and its implications; and psychosexual development and problems. The role of the teacher and parent in encouraging optimal health is emphasized.

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\*Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.



**\*HEA. 155. PHYSICAL FITNESS OF THE INDIVIDUAL. (3)**

First and second semesters. Summer session. A study of the major physical fitness problems confronting the adult in modern society. Consideration is given to the scientific appraisal, development and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. This course is open to persons outside the fields of Physical Education and Health.

**\*HEA. 160. PROBLEMS IN SCHOOL HEALTH EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS. (2-6)**

First and second semesters. Summer session. This is a workshop type course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction.

**\*HEA. 170. THE HEALTH PROGRAM IN THE ELEMENTARY SCHOOL. (3)**

First and second semesters. Summer session. Prerequisites, Hea. 2 and 4 or Hea. 40. This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education. The total school health program is surveyed from the standpoint of organizing and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.)

**\*HEA. 178. FUNDAMENTALS OF SEX EDUCATION. (3)**

This course is concerned with basic information regarding the physical, psychological, social, historical, semantic and comparative cultural aspects of sex. The adjustment needs and problems of children and adults during the course of maturing and aging are studied; and special consideration is given to the sex education program in schools.

**\*HEA. 180. MEASUREMENT IN PHYSICAL EDUCATION AND HEALTH. (3)**

First and second semesters. Summer session. Two lectures and two laboratory periods per week. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of functions and techniques of measurements in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

**HEA. 188. CHILDREN'S REMEDIAL FITNESS CLINIC. (1-4)**

First and second semesters. Summer session. Prerequisite, at least junior standing in health, physical education and recreation, or by special permission of the director. An opportunity to acquire training and experience in a therapeutically oriented physical education-recreation program for children referred by various education, special education, medical and psychiatric groups.

**\*HEA. 189. FIELD LABORATORY PROJECTS AND WORKSHOP. (1-6)**

First and second semesters. Summer session. A course designed to meet the needs

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## HEALTH EDUCATION

of persons in the field with respect to workshop and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in physical education, recreation, or health education under P. E., Rec., Hea., or Ed. 189 is six.

### \*HEA. 190. ADMINISTRATION AND SUPERVISION OF SCHOOL HEALTH EDUCATION. (3)

First and second semesters. Summer session. The application of the principles of administration and supervision to school health education. This course involves observation and field work in school and community health programs.

#### *For Graduates*

### HEA. 200. SEMINAR IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (1)

First and second semesters. Summer session.

### HEA. 201. FOUNDATIONS IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

First and second semesters. Summer session. A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

### HEA. 203. SUPERVISORY TECHNIQUES IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

First and second semesters. Summer session. A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

### HEA. 210. METHODS AND TECHNIQUES OF RESEARCH. (3)

First and second semesters. Summer session. A study of methods and techniques of research used in physical education, recreation and health education; an analysis of examples for their use; and practice in their application to problems of interest to the student.

### HEA. 220. SCIENTIFIC FOUNDATIONS OF HEALTH EDUCATION. (3)

First and second semesters. Summer session. A course dealing with an analysis of hereditary, physical, mental, and social factors which influence the total health status during the developmental process. The role of education in fostering physical and mental health is studied.

### HEA. 230. SOURCE MATERIAL SURVEY. (3)

First and second semesters. Summer session. A library survey course, covering the total areas of physical education, recreation and health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

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\*Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

**HEA. 240. MODERN THEORIES OF HEALTH. (3)**

First and second semesters. Summer session. The purpose of this course is to familiarize advanced students in health education with modern theories of health and disease which involve so-called mind-body relationships. Major topics of study and analysis include the theories of psychosomatics, stress, hypnosis and constitutional psychology.

**HEA. 250. HEALTH PROBLEMS IN GUIDANCE. (3)**

First and second semesters. Summer session. A course designed to familiarize guidance counselors with principles of health and with common deviations from health, especially during the school years. Implications of health for pupil effectiveness in the entire curriculum, including extra-class activities, are dealt with. Special attention is given to psychosomatic disturbances which are commonly an aspect of personal problem situations. Methods of dealing with health problems and utilizing available resources of school and community are discussed.

**HEA. 260. PUBLIC HEALTH EDUCATION. (3)**

First and second semesters. Summer session. A course designed to acquaint the student with the structure, functions and major problems in public health; and with the role of education in public health.

**HEA. 270. STATUS AND TRENDS IN HEALTH EDUCATION. (3)**

First and second semesters. Summer session. This course is concerned with analyzing the current status and implications for future trends in the various areas of health education.

**HEA. 280. THE SCIENTIFIC BASES OF EXERCISE. (3)**

First and second semesters. Summer session. Prerequisites, anatomy, physiology, P. E. 100, P. E. 160, or the equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

**HEA. 287. ADVANCED SEMINAR. (1-2)**

First and second semesters. Summer session. Prerequisites, P. E. 201, Hea. 201, Rec. 201, or Hea. 220, or permission of the instructor. This course is a study of the current problems and trends in the selected field of physical education, recreation and health education.

**HEA. 288. SPECIAL PROBLEMS IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (1-6)**

First and second semesters. Summer session. Master or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

**HEA. 290. ADMINISTRATIVE DIRECTION OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

First and second semesters and summer. This course is devoted to the analysis of administration problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

## PHYSICAL THERAPY

### HEA. 291. CURRICULUM CONSTRUCTION IN PHYSICAL EDUCATION AND HEALTH. (3)

First and second semesters and summer. A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

### HEA. 399. RESEARCH—THESIS. (1-5)

First and second semesters and summer. Students who desire credit for a master's thesis, doctoral dissertation, or a doctoral project should use this number.

## PHYSICAL THERAPY

### COLLEGE PARK CAMPUS

#### P. T. 10, 11. PHYSICAL THERAPY ORIENTATION. (0, 0)

First and second semesters. General introductory course to the professional field of physical therapy. Field trips to physical therapy departments in government and private agencies. Orientation of the student to job opportunities with their specifications and demands; self analysis of the students' capabilities and the major curriculum in light of such specifications and demands.

#### P. T. 20, 21. FOUNDATIONS OF PHYSICAL THERAPY. (1, 1)

First and second semesters. Introduction to the development, growth and functions of physical therapy and rehabilitation. A study of the national organization and the leaders in the field. Analysis of medical terminology and development of a field vocabulary.

### *For Advanced Undergraduates*

### BALTIMORE CAMPUS

#### ANAT. 103. HUMAN ANATOMY. (8½)

First and second semesters. Prerequisites, Zool. 1, 2. 20. The student is given an opportunity to develop a basic concept of the morphology of the human body through a correlation of histology, gross anatomy and neuro-anatomy. Dissection of the human body including the brain is required.

#### PATH. 105. PATHOLOGY. (2)

Second semester. Prerequisites, Anat. 103, Physiol. 142 taken concurrently. This course includes the study of the basic principles of disease and injury with their application to the various systems of the body. Special emphasis is placed on the locomotor system.

#### PHYSIOL. 142. GENERAL PHYSIOLOGY. (5)

Second semester. Prerequisites, Zool. 1, 2; Chem. 1, 3. A course in the fundamentals of human physiology, including neurophysiology, the heart and circulation, respiration, digestion, the kidney and endocrine glands.

#### PSYCH. 161. PSYCHOLOGY OF THE HANDICAPPED. (1)

First semester. Prerequisite, Psych. 5. This course is devoted to the considera-



tion of human relations as applies to the practice of physical therapy. Emphasis is placed on observing, understanding and evaluating the personal and social factors affecting the handicapped.

**P. T. 102. PHYSIOLOGY OF EXERCISE. (1)**

First semester. Prerequisites, Anat. 103, Physiol. 142. A consideration of the mechanism of muscular contraction and problems concerned with increasing efficiency of movement in motor activities and work.

**P. T. 104. FUNCTIONAL ANATOMY. (2½)**

First semester. Prerequisites, Anat. 103, Physiol. 142. This course is primarily a consideration of the locomotor activity of the human body. It is designed to include observation and analysis of motion as it occurs in man under normal and pathological conditions.

**P. T. 106. PROFESSIONAL RELATIONS, ETHICS AND CLINICAL OBSERVATION. (1)**

First and second semesters. A consideration of appropriate conduct related to personal and professional relations of the physical therapist.

**P. T. 107. PHYSICAL THERAPY THEORY AND TECHNIQUE I. (2½)**

**(A) MASSAGE**

First semester. The theory, physiological effects and techniques of scientific massage as it is used in all aspects of physical therapy are discussed and administered.

**(B) HYDROTHERAPY**

First semester. The physics of water, cold and heat are reviewed. The various techniques of whirlpool, hot and cold applications, showers and underwater exercise in relation to various conditions are practiced and discussed.

**(C) BANDAGING**

First semester. In this course one learns the principles and practice of first aid and bandaging with particular emphasis on bandages for support and conformity.

**P. T. 108. PHYSICAL THERAPY THEORY AND TECHNIQUE II—THERMOTHERAPY AND ACTINOTHERAPY. (1½)**

Second semester. The basic physics and physiological effects of heat and ultra-violet are discussed. The student practices the therapeutic application of infra-red and ultra-violet lamps, diathermy, microthermy and ultrasonics.

**P. T. 110. PRINCIPLES OF PHYSICAL THERAPY APPLIED TO MEDICAL AND SURGICAL CONDITIONS. (2½)**

First and second semesters. This course presents to the students various conditions encountered in patients treated by the physical therapist. Specialists discuss the problems in their practice with emphasis on indications for various treatment procedures.

- A. Dermatology
- B. Medicine
- C. Psychiatry

**P. T. 151. THERAPEUTIC EXERCISE. (5)**

First semester. A study of the principles and techniques of therapeutic exercise related to the prevention, correction and alleviation of disease and injury. This course includes manual muscle testing, muscle re-education, joint measurement, gait training and functional activities.

## PHYSICAL THERAPY

### P. T. 152. REHABILITATION. (3)

Second semester. This course is designed to study the principles and practices employed in the comprehensive care and treatment program of the physically handicapped. It includes the evaluation of activities of daily living as well as the application and care of supportive devices.

### P. T. 153. PHYSICAL THERAPY THEORY AND TECHNIQUE III. (3)

#### (A) ELECTROTHERAPY

First semester. This course includes lectures, demonstration and laboratory tests concerning the physical and physiological effects of low frequency, alternating and direct currents. The therapeutic and the diagnostic use of electricity and electromyography is discussed and practiced.

### P. T. 154. INTERPROFESSIONAL AND SOCIAL AGENCIES CORRELATION. (1)

Second semester. Representatives of allied fields and of related social agencies participate in presentation of information and discussion of their specific roles in total patient care.

### P. T. 155. NURSING PROCEDURES RELATED TO PHYSICAL THERAPY. (1½)

First semester. This course serves to acquaint the student with bedside, aseptic and isolation techniques. Laboratory practice includes the application of bandages and splints, the dressing of wounds and methods of handling acutely ill and chronically disabled patients.

### P. T. 156. CURRENT LITERATURE. (1)

Second semester. This course is designed to acquaint the student with professional and scientific literature. It affords experience in presenting reports and in group discussion.

### P. T. 157. ADMINISTRATION AND CLINICAL OBSERVATION. (1)

Second semester. The organization and administration of a hospital and of a physical therapy department are presented.

### P. T. 158. CLINICAL EXPERIENCE. (6)

First and second semesters. During this period the student gains experience practicing physical therapy procedures in a hospital physical therapy department under the careful supervision of qualified physical therapists.

### P. T. 160. PRINCIPLES OF PHYSICAL THERAPY APPLIED TO MEDICAL AND SURGICAL CONDITIONS. (5)

First and second semesters. These lectures present to the students various conditions encountered in patients treated by the physical therapists. Specialists from various fields of medicine and surgery discuss the problems in their practice which are related to physical therapy with emphasis on indications for various treatment procedures.

- A. Gynecology and Obstetrics
- B. Neurology
- C. Physical Medicine and Rehabilitation
- D. Public Health
- E. Surgery
- F. Pediatrics
- G. Orthopedics

## NON-MAJOR PROGRAM

### REQUIRED PHYSICAL EDUCATION COURSES FOR MEN AND WOMEN

All undergraduate men and women students classified as freshmen or sophomores, who are registered for more than six semester hours of credit are required to enroll in and successfully complete four prescribed courses in physical education and/or athletics for a total of four semester hours of credit. The successful completion of these courses is required for graduation. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Men and women who have reached their thirtieth birthday are exempt from these courses. Adapted courses are offered for those unable to participate in the regular program. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first.

Students majoring or minoring in physical education, recreation, health education, physical therapy, or specializing in elementary school physical education and health education, may meet these requirements by special professional courses.

#### REQUIRED COURSES

P. E. Courses for men carry odd numbers—1, 3, 5, 7.

P. E. Courses for women carry even numbers—2, 4, 6, 8.

Co-ed classes are formed by combining men's and women's sections.

A student having a physical handicap which prevents participation in the regular required program will be assigned to an adapted activity suitable to his or her physical capacity. This refers to P. E. 1 to 8, inclusive.

*Fee* for all physical education courses will be \$6.00 per semester.

*Equipment*—Students may be required to provide individual equipment for some courses.

#### P. E. S10. PHYSICAL EDUCATION ACTIVITIES. (1-6)

Summers only. Laboratory fee, \$6.00. Instruction and practice in selected sports, tennis, golf and swimming.

Note. (1). Not available for credit to physical education majors.

Note. (2). Non-majors in physical education may use this credit to fulfill graduation requirements in physical education.

## THE PROGRAM FOR MEN

The program of physical education for men offers the college student an opportunity to acquire skills, knowledges, and appreciations in a variety

## REQUIRED PHYSICAL EDUCATION

of physical and sport activities. Adequate participation now and in the future will contribute to more efficient physiological functioning, effective movement, improved human relations, and worthwhile use of leisure time. Students are required to complete one unit of work in each of the following four courses.

### P. E. 1. ORIENTATION TO PHYSICAL EDUCATION. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. The purpose of this course is to give the student a better understanding and appreciation of the place of sports and physical education in the American way of life. It is designed to introduce the student to the value of sports participation in each of the three areas: (1) Development and Combative Sports, (2) Team Sports and Aquatics, and (3) Recreational Activities. This is accomplished through reading assignments, lectures, discussions, and by participation in a variety of sports in each area. In addition, each student is acquainted with the fitness, health, social and leisure time values inherent in continued participation in sports and other physical education activities.

All entering freshmen are required to complete P. E. 1. *Orientation to Physical Education*. Students are then guided into an activity in each of the three areas indicated below. The selection of an activity is based upon the student's individual needs, interests, his past experience, and his level of fitness. Students who fail the swimming classification test, and/or the fitness test, requirements of Orientation to Physical Education are required to take special courses in these areas.

### P. E. 3. DEVELOPMENTAL AND COMBATIVE SPORTS. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: apparatus; double tumbling and balancing; judo, track and field and wrestling; weight training; basic motor fitness.

### P. E. 5. TEAM SPORTS AND AQUATICS. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: Elementary swimming, advanced swimming, life saving, water safety instructor's course\*; diving; softball and basketball; speedball and volleyball; touch football and volleyball; lacrosse and ice skating; soccer and volleyball; flickerball and volleyball.

### P. E. 7. RECREATIONAL ACTIVITIES. (1)

First and second semesters. Three hours a week. Prerequisite, P. E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: archery and bowling\*\*; tennis and badminton\*\*; archery and fencing\*\*; camping and outdoor activities\*\*; canoeing and ice skating\*\*; fishing\*\*; sailing\*\*; social dance\*\*; square dance\*\*; modern dance\*\*; golf\*\*; riflery; and recreational games\*\*.

**COSTUME:** Each male student enrolled in required physical education will be furnished a red and black reversible T-shirt, black trunks, socks,

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\* Prerequisite for this course: 18 years of age or older and hold a current Senior Life Saving Card.

\*\* Some sections of these activities are co-ed.



## REQUIRED PHYSICAL EDUCATION

supporter, and towel. Gymnasium shoes, and for some classes, sweat clothes will be furnished by the student.

At the end of each semester or upon withdrawal from the University each student *must* return his clothing to the equipment custodian or he will be billed for all items of clothing missing, plus a \$2.00 penalty fee. In addition the College will not assume responsibility for student's personal clothing or his lock.

**LOCKS AND LOCKERS:** A basket is assigned each student upon presentation of his University fee receipt. During class time each student secures his clothing and basket in a locker.

### THE PROGRAM FOR WOMEN

Through participation in a variety of activities, freshman and sophomore women have the opportunity to acquire skills, knowledge, and attitudes which will contribute to personal enjoyment and better physical efficiency. Students are required to complete one unit of work in each of the four areas. Activities within the specified areas may be selected according to individual interests and needs. Students are urged to develop new skills as well as to select those in which they would like to have further experience.

The areas are designated by specific numbers as follows:

#### P. E. 2. ORIENTATION ACTIVITIES. (1)

First and second semesters. Three hours a week. Required of all freshmen women. Laboratory fee, \$6.00. This is a summary course designed to acquaint the student with the role of the College of Physical Education, Recreation, and Health at the University of Maryland. It includes the teaching of basic body mechanics as related to posture and sports skills. It helps the student understand the use of exercise and relaxation in relation to total fitness for her college life and for the future.

#### P. E. 4. SWIMMING. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Each student may select a course best suited to her own skills from the following: beginning, low intermediate, intermediate, advanced, synchronized, diving, senior life saving, water safety instructors, methods of teaching aquatics. Each course is designed to improve the skill of the individual, to increase enjoyment in swimming and to give an understanding of safety factors involved in swimming.

#### P. E. 6. DANCE. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Students may elect one of the following: folk and square, social,\* beginning modern, intermediate modern, dance composition. This area offers the student a variety of opportunities in the field of dance. The courses included give instruction in skill, style, and the creative aspect of dance and are designed to increase enjoyment, appreciation and understanding of dance.

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\*Social dance sections are co-educational.

## REQUIRED PHYSICAL EDUCATION

### P. E. 8. SPORTS. (1)

First and second semesters. Three hours a week. Laboratory fee, \$6.00. This area includes team and individual sports, recreational games, and outdoor education. Students may elect from the following: archery, badminton, basketball, bowling, camping and outing, canoeing, fencing, fishing, golf, hockey, recreational games, riding (see note), sailing, softball, tennis, trampoline, stunts and tumbling, and volleyball. These courses are planned to improve the skill of the individual and to increase enjoyment as a spectator and/or a participant.

Note: A special fee of \$26.00 is charged for riding instruction.

**PROFICIENCY EXAMINATION:** There is one exception to the above departmental requirement. Any student who feels she is proficient in one or more areas will be given the opportunity to take an examination to prove this fact. If she chooses to take it and passes she is then permitted to acquire her four credit hours of Physical Education in any area she wishes.

**COSTUME:** Each woman student is expected to provide herself with gymnasium costume consisting of dark green bermuda shorts, white slip-over blouse, white socks and tennis shoes. Leotards are usually worn in modern dance classes. This is optional.

**LOCK AND LOCKERS:** A locker and lock are assigned to each girl at the first meeting of her class upon presentation of her University fee receipt. At the close of the last class each one is held responsible for cleaning out her locker and returning the lock.

## REQUIRED HEALTH EDUCATION COURSES FOR WOMEN

All freshmen women are required to complete one semester of Personal Health (Hea. 2) and one semester of Community Health (Hea. 4) for graduation. Students who demonstrate proficiency in Personal Health or Community Health on a test to establish credit may be exempted from either Health 2 or Health 4 but *not* both. These courses must be taken in consecutive order with Hea. 2 taken first. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first. These semester courses are designed to meet the functional health needs and interest of college women. The basic units of instruction have been evolved from present day scientific backgrounds. It is hoped that through these health courses the student will be better able to develop correct attitudes, habits and knowledge that will facilitate a more effective type of everyday living. Audio-visual aids, reading, reports, field trips, guest speakers, and special lectures help to enrich the class discussions. The University environment, the personal and group adjustment which the students must make are considered to form the core of these courses.

Women who have reached their thirtieth birthday are exempt from these courses.

### HEA. 2. PERSONAL HEALTH. (2)

First and second semesters. A course concerned primarily with health knowledge,

## STUDENT ORGANIZATIONS

attitudes and skills as they apply to the individual. Here consideration is given to basic overall concepts of health, nutrition, mental health, and preparation for family living.

### HEA. 4. COMMUNITY HEALTH. (2)

First and second semesters. A course designed to explore the magnitude of community health problems as they affect the individual. Basic units of instruction include chronic and communicable diseases, stimulants, and depressants, consumer health, problems of the aging, and health services on the local, state, national, and international levels.

## STUDENT ORGANIZATIONS SPONSORED BY THE COLLEGE

**PHI ALPHA EPSILON:** Honorary Society of the College of Physical Education, Recreation, and Health.

The purpose of this organization is to recognize academic achievement and to promote professional growth by sponsoring activities in the fields of physical education, recreation, health, physical therapy, and related areas.

Students shall qualify for membership at such time as they shall have attained junior standing in physical education, health, recreation, or physical therapy, and have a minimum overall average of 2.7 and a minimum professional average of 3.1. Graduate students are invited to join upon passing the Master's qualifying examinations.

The organization is open to both men and women.

**MAJORS' CLUB:** All students enrolled in the college are eligible for membership in this organization. It conducts various professional meetings, brings in speakers and promotes various co-recreational activities. It has sponsored trips to District and National conventions of the American Association for Health, Physical Education, and Recreation, and is chartered as a student major club of that organization.

**SIGMA TAU EPSILON:** This society, founded in 1940, selects those girls who have attained an overall 2.5 average and demonstrated outstanding leadership, service and sportsmanshiplike qualities in the organization and activities of the Women's Recreation Association and its affiliated groups.

**AQUALINERS:** This synchronized swimming club is open to all men and women registered in the University. Through weekly meetings the group concentrates on additional stroke perfection, individual and group stunts, diving, and experimentation with various types of accompaniment and choreographic techniques. An original water show is presented each spring and several demonstrations are given each year. Tryouts are held twice a year—once at the beginning of the fall Semester, and again after the water show during the spring semester.



## STUDENT ORGANIZATIONS

**UNIVERSITY OF MARYLAND RECREATION SOCIETY:** In the fall of 1959 the University of Maryland Recreation Society was formed by the undergraduate and graduate major and minor students of the College. The Society, an affiliate of various national recreation organizations, provides opportunities for university and community service, for rich practical experience, and for social experiences for those students having a mutual professional recreation interest.

**MODERN DANCE GROUPS:** Men and women interested in modern dance concentrate on dance techniques and individual and group compositions. Members present a spring concert and perform in demonstrations on and off campus. Advanced and beginning groups meet weekly. No experience necessary for beginning club.

**GYMKANA TROUPES:** The Gymkana Troupe includes men and women students from all colleges that wish to express themselves through the medium of gymnastics. These individuals coordinate their talents in order to produce an exhibitional performance that has been seen in many places including Bermuda, Iceland, Azores, Idaho, Montana, and the Eastern Seaboard of the United States. The organization has three principal objectives: (1) to provide healthful, co-recreational activities that provide fun for the students during their leisure hours; (2) to promote gymnastics in this locality; and (3) to entertain our students and people in other communities.

This organization is co-sponsored by the Physical Education Department and the Student Government Association; and it welcomes any student, regardless of the amount of experience, to join and to have fun.

**INTRAMURALS FOR MEN:** The Intramural Department offers an extensive opportunity for all men to participate in a recreational program of either individual or team sports. A variety of activities are available to fill the student's leisure time and develop skills which may be carried over into later life. Also, many desirable attributes, such as fair play, leadership, teamwork and sportsmanship, are encouraged and developed by the student participating in the program.

Leagues and tournaments are conducted in the following sports: touch football, horseshoe pitching, tennis, cross country, track and field, basketball, table tennis, badminton, boxing, wrestling, bowling, volleyball, swimming, foul shooting and softball.

Management and officiating in intramural sports are conducted by students majoring in physical education under the supervision of the Director of Intramurals and under policies and regulations established by the Intramural Council.

**WEIGHT LIFTING CLUB:** The University of Maryland Weight Lifting Club is open to all students and faculty for exercise with the weights throughout the week during all hours that Cole building is open.



## STUDENT ORGANIZATIONS

The University of Maryland Olympic Barbell Club is a more highly organized group of the original club. It is recognized by Student Government Association. Bi-monthly meetings are held; they assist in leadership; offer clinics and demonstrations, etc.; participate in competition; earn an award of recognition.

**WOMEN'S RECREATION ASSOCIATION:** *All women students of the University are members of the Women's Recreation Association*, an affiliate of the Athletic and Recreational Federation of College Women. Under the leadership of its elected student officers and representatives and appointed sports managers, the WRA sponsors a full program of intramural, extramural, and interest group activities. These activities seek to develop new interests and skills for leisure-time enjoyment, provide opportunities for continuing both old and new interests, and provide a democratic atmosphere for educational leadership experiences. Included are free and tournament play in archery, badminton, basketball, bowling, fencing, field hockey, golf, softball, swimming, table tennis, tennis, and volleyball; social events; and co-recreational activities in bowling, badminton, volleyball. Intramural tournaments are organized through the dormitory, sorority, and "day dodger" groups of the University. Sports Days and Play Days with other colleges and universities enable the more skilled students to participate with others of similar abilities. Opportunities are also provided for officiating experience and for the earning of official WNORC ratings in basketball, field hockey, swimming, and volleyball.

Various special groups and clubs interested in recreation exist on campus outside the Women's Recreation Association program and offer rich opportunities for the development of other recreational interest. Some of these are the Terrapin Trail Club, Chess Club, Gymkana Troupe, Sailing Club, Ski Club, and musical and dramatic groups.

# THE FACULTY

## *Administrative Officer*

FRALEY, Lester M., *Professor and Head, Department of Physical Education, and Dean of Physical Education, Recreation and Health*

A.B., Randolph-Macon College, 1928; M.A., Peabody College, 1937; Ph.D., 1939.

## *Professors*

EYLER, Marvin H., *Professor of Physical Education*

A.B., Houghton College, 1942; M.S., University of Illinois, 1948; Ph.D., 1956.

HARVEY, Ellen E., *Professor of Physical Education and Recreation*

B.S., New College, Columbia University, 1935; M.A., Teachers College, Columbia University, 1941; Ed.D., University of Oregon, 1951.

HUMPHREY, James H., *Professor of Physical Education and Health*

A.B., Denison University, 1933; A.M., Western Reserve University, 1946; Ed.D., Boston University, 1951.

JOHNSON, Warren R., *Professor of Physical Education and Health*

B.A., University of Denver, 1942; M.A., 1947; Ed.D., Boston University, 1950.

MASSEY, Benjamin H., *Professor of Physical Education*

A.B., Erskine College, 1938; M.S., University of Illinois, 1947; Ph.D., 1950.

## *Associate Professors*

CRONIN, Frank H., *Associate Professor of Physical Education; Head Golf Coach*

B.S., University of Maryland, 1946.

HUSMAN, Burris F., *Associate Professor of Physical Education*

B.S., University of Illinois, 1941; M.S., 1948; Ed.D., University of Maryland, 1954.

KEHOE, James, *Associate Professor of Physical Education, Director of Intramurals, and Head Track Coach*

B.S., University of Maryland, 1940.

LATIMER, Ruth M., *Associate Professor of Physical Therapy*

B.S., Westhampton College, University of Richmond, 1945; C.P.T., U. S. Army Hospital, 1946; M.S., Medical College of Virginia, 1952.

MADDEN, Dorothy G., *Associate Professor of Physical Education*

A.B., Middlebury College, 1936; M.A., Syracuse University, 1937; Ph.D., New York University, 1961.

PICKETT, Wilda D., *Associate Professor of Physical Education*

B.S., Missouri State College, 1932; M.A., Teachers College, Columbia University, 1934; Ed.D., 1955.

## FACULTY

TOMPKINS, Theron A., *Associate Professor of Physical Education*  
B.S., Eastern Michigan College of Education, 1926; M.A., University of Michigan, 1939.

WOODS, Albert A., *Associate Professor of Physical Education*  
B.S., University of Maryland, 1933; M.Ed., 1949.

### *Assistant Professors*

CAMPBELL, William R., *Assistant Professor of Physical Education and Head Swimming Coach*

B.S., Springfield College, 1949; M.Ed., 1953.

FREUNDSCHUH, J., *Assistant Professor of Physical Education*

B.S., University of Alabama, 1953; M.A., 1954.

HANSON, Dale L., *Assistant Professor of Physical Education*

B.A., St. Olaf College, 1952; M.S., Mankato State College, 1956; Ph.D., Michigan State University, 1962.

HARRINGTON, Mary R., *Assistant Professor of Physical Education*

B.S., College of William and Mary, 1949; M.A., New York University, 1951.

HOWARTH, Louise S., *Assistant Professor of Physical Education*

A.B., Breanau College, 1928; M.Ed., University of Minnesota, 1949.

INGRAM, Anne G., *Assitant Professor of Physical Education*

A.B., University of North Carolina, 1944; M.A., University of Georgia, 1948; Ed.D., Teachers College, Columbia University, 1962.

KESLER, Ethel, *Assistant Professor of Physical Education*

B.S., Woman's College, University of North Carolina, 1949; M.S., Wellesley College, 1953.

KRAMER, George P., *Assistant Professor of Physical Education*

B.S., University of Maryland, 1953; M.A., 1956.

KROUSE, William E., *Assistant Professor of Physical Education and Head Wrestling Coach*

B.S., University of Maryland, 1942; M.Ed., 1949.

LOWDER, Jack S., *Assistant Professor of Physical Education*

B.S., Wake Forest, 1950; M.E., University of North Carolina, 1955.

NELSON, Richard C., *Assistant Professor of Physical Education*

B.A., St. Olaf College, 1954; M.Ed., Houston College, 1957; Ph.D., Michigan State University, 1960.

NESSLER, Joan, *Assistant Professor of Physical Education*

B.A., Wellesley College, 1951; M.A., State University of Iowa, 1952; Ph.D., Pennsylvania State University, 1961.

SEEMAYER, Delores, *Assistant Professor of Health Education*

B.S.N.E., Florida State University, 1959; M.S., 1961.

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- SANDERSON, Eleanor B., *Assistant Professor of Physical Education*  
B.S., East Carolina College, 1955; M.Ed., Woman's College, University of North Carolina, 1959.
- SLUSHER, HOWARD S., *Assistant Professor of Health Education*  
B.S., Brooklyn College, 1959; M.A., Ph.D., Ohio State University, 1962.
- STEEL, Donald H., *Assistant Professor of Physical Education*  
B.S., Trenton State Teachers College, 1955; M.A., University of Maryland, 1957.
- TERRY, Doris, *Assistant Professor of Health Education*  
B.S., Western Kentucky State College, 1949; M.S., University of Indiana, 1952; M.P.H., University of North Carolina, 1958.
- TIFFT, Margaret, *Assistant Professor of Health Education*  
B.S., Ohio State University, 1946; M.A., Columbia University, 1948.

### Instructors

- ARRIGHI, Margarite A., *Instructor of Physical Education*  
B.S., Westhampton College, University of Richmond, 1958; M.A., University of Maryland, 1962.
- CHAMPLIN, James R., *Instructor of Recreation*  
A.B., Earlham College, 1953; M.S., Indiana University, 1956; Re. Dir., 1956.
- GOTTA, Jerry M., *Instructor of Health Education*  
B.S., Moorhead State College, 1960; M.A., Colorado State College, 1961.
- HAMBERG, Dorothy, *Instructor of Physical Education*  
B.S.E., Arkansas State Teachers College, 1946; M.E., University of Arkansas, 1951.
- HOLDEN, Beverly K., *Instructor of Physical Education*  
B.S., B.A., Shepherd College, 1957; M.Ed., Miami University, Ohio, 1958.
- JACKSON, Elton S., *Instructor of Physical Education*  
B.S., University of Maryland, 1958.
- MULLIS, Ollie R., *Visiting Instructor of Physical Education, Assistant Director of Intramurals.*  
B.S., University of Maryland, 1962.
- WILKINSON, Owen J., *Instructor of Physical Education*  
B.S., Pennsylvania State College, 1953; M.A., Appalachian State Teachers College, 1958.

### Lecturers

- COBEY, W. W., *Associate Professor, Director of Athletics*  
A.B., University of Maryland, 1930.
- MILLIKAN, H. A., *Associate Professor and Head Basketball Coach*  
B.S., Oklahoma A. & M. College, 1943.
- WYRE, Alfred J., *Head Trainer*



*CATALOG OF*  
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# UNIVERSITY CALENDAR, 1963-64

## *Fall Semester 1963*

September 16-20	Monday-Friday	Fall Semester Registration
September 23	Monday	Instruction begins
November 28	Wednesday, after last class	Thanksgiving recess begins
December 1	Monday, 8:00 a.m.	Thanksgiving recess ends
December 20	Friday, after last class	Christmas recess begins

## *1964*

January 6	Monday, 8:00 a.m.	Christmas recess ends
January 22	Wednesday	Pre-Examination Study Day
January 23-30	Thursday-Wednesday	Fall Semester Examinations

## *Spring Semester*

February 3-7	Monday-Friday	Spring Semester Registration
February 10	Monday	Instruction begins
February 22	Saturday	Washington's Birthday Holiday
March 25	Wednesday	Maryland Day (Not a Holiday)
March 26	Thursday, after last class	Easter recess begins
March 31	Tuesday, 8:00 a.m.	Easter recess ends
May 13	Wednesday	AFROTC Day
May 28	Thursday	Pre-Examination Study Day
May 29-June 5	Friday-Friday	Spring Semester Examinations
May 30	Saturday	Memorial Day, Holiday
May 31	Sunday	Baccalaureate Exercises
June 6	Saturday	Commencement Exercises

## *Summer Session, 1964*

June 22	Monday	Registration, Summer Session
June 23	Tuesday	Instruction begins
July 4	Saturday	Independence Day, Holiday
August 14	Friday	Summer Session ends

## *Short Courses*

June 15-19	Monday-Friday	Rural Women's Short Course
August 3-7	Monday-Friday	4-H Club Week
September 8-11	Tuesday-Friday	Firemen's Short Course



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B.S., University of Maryland, 1942; PH.D., 1952.

### **ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development***

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A.B., Harvard College, 1944; LL.B., Harvard Law School, 1948.

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B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse  
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land, 1932; PH.D., 1933.



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B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; ED.D., University of Maryland, 1952.

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R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A., in Hospital Administration, University of Chicago, 1943.

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B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.

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A.B., Huron College, 1933; M.A., University of Chicago, 1939; D.S.W., Western Reserve University, 1954.

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B.S., Tufts College, 1929; M.A., Harvard University, 1931; PH.D., University of North Carolina, 1950.

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B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

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B.A., Columbia University, 1937; M.A., 1938; PH.D., 1953.

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B.A., University of Maryland, 1930; M.S., 1931.

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B.A., University of Maryland, 1938.

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B.S., Oklahoma State University, 1950; M.S., 1955; ED.D., Cornell, 1960.

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B.S., University of Maryland, 1933.

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B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.

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—————, *Director*

## *EUROPEAN DIVISION, Heidelberg, Germany*

MASON G. DALY, PH.D., *Director*

## *FAR EAST DIVISION, Tokyo, Japan*

LESLIE R. BUNDGAARD, PH.D., *Director*



ARTISTS' RENDERING OF NEW ADULT EDUCATION  
CENTER NOW UNDER CONSTRUCTION

# THE COLLEGE

The increasing complexity of modern-day life, produced in part by the staggering rate of growth of man's knowledge, has strengthened the conviction that education is a lifelong process. This conviction has gained momentum within the historical framework of the Land-Grant Movement which has emphasized a balance among teaching, research, and service. Subscribing to this principle, the University of Maryland through University College, seeks to *serve* qualified adults by making the *research* and *teaching* talents of the University relevant to their life situations.

University College realizes that its adult students differ from younger full-time University students. The College accepts the challenge, however, of offering educational opportunities consonant with these differences, while maintaining in every essential way academic standards appropriate to the University's requirements for any or all of its colleges.

Specifically, University College is committed to the task of providing opportunities of higher education that stimulate the adult's intellectual life, promote his career, and develop his sense of individual and community responsibility.

## HISTORY AND ORGANIZATION OF THE COLLEGE

University College is one of the eight colleges and seven professional schools which make up the University of Maryland. It offers degree and non-degree educational programs in the late afternoon and evening for mature adults, both on-campus and off-campus, throughout the State of Maryland, the District of Columbia, and 24 foreign countries on four continents. The Overseas Programs are offered for U. S. military and civilian personnel and their dependents in cooperation with the Department of Defense. The College also organizes conferences and institutes for periods varying from one day to several weeks. Administratively and academically the College is an integral part of the University of Maryland. University College is, however, fiscally self-sustaining.

Other colleges and schools of the University also offer late afternoon and evening programs, but these are administered separately from University College. Persons interested in such programs should direct their inquiries to the college or school involved. For example, the College of Education offers teacher education and graduate education courses on the College Park campus in the evening; the extension service of the College of Agriculture has a state-wide program; the School of Law offers evening work in Baltimore. Other departments of the University occasionally offer late afternoon and evening courses, primarily for their graduate students.

Evening courses have been offered by various departments of the University of Maryland since the 1920's. In 1947, the College of Special and Continuation Studies was established to administer the off-campus evening courses. In 1959, its name was changed to University College. In addition to the main office at College Park, there are six major administrative divisions of the College: the Conferences and Institutes Division, the College Park Evening Division, the

## HISTORY AND ORGANIZATION

Baltimore Division, the European Division, the Atlantic Division, and the Far East Division.

The home office of University College is located on the College Park campus. It has jurisdiction over all of its component divisions. In addition, except for courses offered through the Baltimore Division, the home office administers the off-campus programs of the University for military personnel in the State of Maryland and the District of Columbia, off-campus courses for business and industry, education and allied courses for in-service teachers, and programs for various governmental agencies.

**THE CONFERENCES AND INSTITUTES DIVISION**, established in 1952, has its headquarters in the College Park offices of University College. It offers conferences, institutes, short courses, and selective adult education programs on the College Park and Baltimore Campuses, and throughout the State of Maryland at the request of organized groups. These offerings are of a non-degree nature; however, under certain circumstances it may be possible to arrange special programs adaptable to degree requirements. For more detailed information see pages 7-10.

**THE COLLEGE PARK EVENING DIVISION** was established in 1959 to serve adults in the College Park vicinity who are unable to attend daytime classes. It is administered by the Evening Division Director who is located in the College Park offices of University College. This Division offers a variety of courses leading to the Bachelor of Arts degree in General Studies. Courses in the Evening Division are conducted with the cooperation of the regular academic department heads.

**THE BALTIMORE DIVISION** originated with a program of courses, primarily for teachers, offered in Baltimore by the University in the mid nineteen-twenties. With the establishment of what is now University College in 1947, the Baltimore program was incorporated into the College. The Baltimore Division is administered by a director and staff with offices on the Baltimore campus at Lombard and Greene Streets. A broad program of credit courses is offered on the undergraduate and graduate levels. Degree opportunities are offered for students in General Studies, Education, and for registered nurses in Nursing. In addition, the Baltimore Division administers approximately fifteen smaller centers where programs are offered for teachers, industrial personnel, military personnel, state and municipal employees, and prison inmates.

**THE EUROPEAN DIVISION**, established in 1949, was the first to offer courses overseas. It is administered by a director and staff located in Heidelberg, Germany. An assistant director for the United Kingdom has offices in London. Courses administered by the European Division are available in thirteen foreign countries in Europe, Africa, and the Near and Middle East. Also administered by the European Division is the Munich Campus, a two-year college daytime program established to meet the educational needs of college-age dependents of Armed Forces and Government personnel.



## ORGANIZATION, EDUCATIONAL PROGRAMS

**THE ATLANTIC DIVISION**, which offers programs similar to those in the European Division, was established in 1951. It is administered by a director with headquarters in the College Park offices of University College. Administered by the Atlantic Division are centers in the Azores, Bermuda, Greenland, Iceland, Labrador, and Newfoundland.

**THE FAR EAST DIVISION** was established in 1956. A director and staff have headquarters in Tokyo. An assistant director, located in Seoul, is in charge of the program in Korea. The Far East Division conducts courses in Japan, Korea, Guam, Okinawa, Taiwan (Formosa), and Vietnam.

Credit courses offered in the overseas divisions lead to the Bachelor of Arts degree in General Studies.

## EDUCATIONAL PROGRAMS

**CREDIT COURSES:** Dependent on available facilities and faculty at any given location, credit courses are offered in such fields as botany, business administration, chemistry, economics, education, engineering science, English, foreign languages, geography, government and politics, health, history, journalism, public relations, mathematics, microbiology, military studies, music, nursing, nutrition, philosophy, physical education, physics, psychology, recreation, sociology, and speech.

**DEGREE AND CERTIFICATE OPPORTUNITIES:** University College offers the Bachelor of Arts degree in General Studies. Adult part-time students may also pursue other University degree programs under the supervision of the specific degree granting college.

Advanced courses are available to graduate students at a limited number of locations in the State and in the Pentagon. Personnel at research and development agencies such as the Naval Ordnance Laboratory, the Naval Research Laboratory, the National Bureau of Standards, and others, may pursue courses leading toward graduate degrees in the physical sciences. Courses leading to the Master's degree are offered at the Pentagon in government and politics. Advanced courses for teachers are offered at various locations throughout the State. Graduate courses in education are offered at the Baltimore center.

Students following an adult program with the University of Maryland, who have completed the first two years of an established curriculum, may be granted a certificate of Associate in Arts provided that they have completed 60 semester hours, not including basic air science and physical activities. The final 15 semester hours must be completed in residence at the University of Maryland with a minimum average grade of 2.0 ("C"). The student must make formal application for the certificate to the Office of the Registrar. The certificate must be recommended by the college in charge of the curriculum.

## EDUCATIONAL PROGRAMS, ON-CAMPUS FULL-TIME STUDY

**TEACHER EDUCATION PROGRAMS:** In cooperation with the College of Education, University College offers in-service courses at various locations throughout the State for teachers. Single courses or sequences of courses may be arranged with county school superintendents to enable teachers to attain or renew teaching certificates. In a number of counties, the University, in cooperation with the boards of education, has projected cycles of courses to facilitate long-range planning.

A person intending to qualify as a teacher in any city, county, or state, should obtain a statement of certification requirements for that particular area and should plan a program accordingly. The Maryland State Department of Education specifies that an in-service teacher may present for certificate credit not more than *six* semester hours completed during one school year.

**SPECIAL PROGRAMS FOR TEACHERS:** The staff of the Institute for Child Study of the College of Education offers for teachers a series of courses on human development and on the techniques of child study. The sequence of three courses, Child Development Laboratory I, II, and III, involves the direct year-long study of children as individuals and in groups. It is offered to teachers in many states throughout the country as well as in the State of Maryland. Registrations are administered by University College.

During the past several years, students in the following states have enrolled in the program for credit: Alabama, Arkansas, California, District of Columbia, Florida, Georgia, Idaho, Kentucky, Louisiana, Maryland, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Virginia, and Washington.

**TELEVISED COURSES:** Between 1959 and 1961, the University offered several television courses in cooperation with commercial TV stations in Baltimore and Washington. Courses in the fields of astronomy, childhood education, human development education, and Spanish were broadcast as a public service by the stations and were administered by University College as part of its program of continuing education.

## ON-CAMPUS FULL-TIME STUDY

Each semester a large number of military officers and enlisted men are assigned by their respective branches of the service to the campus on a temporary duty basis. The purpose of the temporary duty is to enable them to complete college degree requirements through full-time study. All tuition and other fees are paid by the student who continues to receive his military pay while attending the University. For further information on the Bootstrap Program, consult your installation education advisor or University College.

It is also possible for students who have begun their programs off-campus to come at some future date, usually upon discharge or retirement, to the campus for full-time study in order to complete the curriculum started off-campus.

## FACULTY

The content of all courses offered overseas and stateside is under the jurisdiction of the respective academic departments which are responsible for the campus courses. The teaching faculty consists of regular campus faculty members and full-time and part-time lecturers who are approved by the specific Department Head for the courses which they teach. Approvals are made on the basis of credentials submitted to the heads of the several academic departments located at College Park.

## LIBRARY SERVICES

In cooperation with the University of Maryland Library, University College operates an off-campus library service. Scheduled bookmobile visits are made to off-campus centers where students may borrow library materials. In certain distant class centers collections of course-related books are placed under the supervision of the local library or of the course instructor for the convenience of students.

The facilities of the University of Maryland Library at College Park are available to enrolled University College students. A separate reading and reference room is maintained in the Health Sciences Library in Baltimore for use by University College students in that area. Both libraries are open on scheduled evenings.

Overseas, course-related books are sent from base to base with the instructors. In general, reference materials for the courses offered are available at installation libraries which maintain a close cooperation with the respective headquarters of the overseas divisions of University College.









# CONFERENCES AND INSTITUTES DIVISION

The Conferences and Institutes Division's primary orientation is adult education. It is essentially an administrative unit organized to coordinate the University's administrative, academic, and operating facilities with the educational needs of adult groups in business, industry, government, the armed forces, and the professions. A unique feature of the Division is its flexibility to plan, promote, and conduct educational programs for adult groups who wish to come to the campus for brief instructional periods. Although these programs are not designed to grant credit toward degrees, they draw directly upon the research activity and teaching talent of the University's faculty.

Ordinarily, adult education programs conducted at the University of Maryland are coordinated through the Conferences and Institutes Division.\* This procedure provides outside groups with a single official agency capable of fully serving their general educational needs. The Division facilitates program coordination, assures the maintenance of necessary communication between the adult group and university service agencies, and prevents unnecessary duplication of effort in planning, promoting, and operating the program.

As a State University, the University of Maryland is dedicated to serving the citizens of the State with a "Quantity of Quality" in higher education. The Conferences and Institutes Division reflects this philosophy by presenting, whenever and wherever possible, distinctive programs meeting the educational needs of the adult population.

## INITIATING A PROGRAM

### WHO MAY REQUEST A PROGRAM?

Any College or Department of the University of Maryland

Any professional society or association of a statewide, regional, national, or international nature wishing to meet for an educational purpose.

Any adult group in the state wishing to meet for an educational purpose.

With appropriate clearances, younger persons may also meet on the campus.

The Conferences and Institutes Division itself in fulfilling a clearly demonstrated educational need for a particular group, or in pioneering a new adult education venture.

### WHEN MAY THE REQUEST BE INITIATED?

While there is no hard and fast rule as to the time element required to prepare for a program, it is recommended that all program requests be made to the

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\*Programs conducted by the University's Agriculture Extension Service are under the supervision of the College of Agriculture. For further information, inquiries should be sent to the Director of Extension Service, College of Agriculture, University of Maryland, College Park, Maryland, or telephone WARfield 7-3800, extension 320.

## INITIATING, APPROVAL OF A PROGRAM

Conferences and Institutes Division at least three to six months in advance of the proposed date of the program. Some programs, for example conventions, may require one year or more in the planning alone. Thus program planners should anticipate their particular needs and submit their requests as early as is practicable in advance of the opening program date.

### TO WHOM SHOULD REQUEST BE DIRECTED?

All requests to conduct a general education program at the University of Maryland should be made by communicating with the Conferences and Institutes Division, University College, University of Maryland, College Park.

## APPROVAL OF A PROGRAM

Groups desiring to arrange adult education programs such as conferences, institutes, seminars, workshops, clinics, and symposia should be aware that the acceptability of a particular program is based upon three underlying considerations:

**INSTRUCTIONAL CONTENT.** Most fundamentally, the program must be essentially educational in nature. That is, participants must be provided with a worth-while learning experience in areas appropriate to the University's standing as an institution of higher education.

**ACADEMIC CONTROL.** The program must lend itself to adequate academic control by the University in two ways:

**UNIVERSITY APPROVAL.** While the University does not dictate program content, it does reserve the right to determine, through the appropriate academic divisions, that University standards are maintained in the fields covered. Where the subject matter of a program is not within the purview of any College or Department, approval or disapproval shall be determined by the Vice President in Charge of Academic Affairs and the Director of the Conferences and Institutes Division.

**FACULTY PARTICIPATION.** Since the University has a great resource of qualified faculty members in many fields of study, it is not only fitting, but most advantageous to the program itself, that University professors and research specialists be utilized whenever possible.

**ADMINISTRATIVE JURISDICTION.** The sponsors of any program to be conducted in cooperation with the University will benefit from the experience of the Conferences and Institutes Division personnel. In order to insure the quality and success of any program of adult education, the sponsoring organization may call upon the division to assist with or handle entirely the myriad details of program construction, recruitment of lecturers, printing and promotion, secretarial support, supply of audiovisual equipment and operators, and other related services. Among the administrative services necessarily performed by the Conferences and Institutes Division are the coordination of arrangements for physical needs including meals, housing, and meeting space; the preparation

of the budget based on the actual cost of all program requirements; the collection of fees; and the payment of all bills incurred in operating the program. The prospective program must lend itself to operation on a financially self-sustaining basis. This can be accomplished by prorating the total cost among the anticipated participants, by complete subsidization by the sponsoring organization, or by prorating part of the cost and subsidizing the remainder.

## TYPES OF PROGRAM OFFERINGS

The following is a partial listing of programs that have been conducted by the Conferences and Institutes Division. Many of these programs are offered annually by the University in cooperation with the sponsoring group or groups.

- Adult Education Institute
- Agricultural Meteorology Institute
- American Legion Boys Nation
- Analytic Chemistry Symposium
- Armed Forces Education Conference
- ASME—Aviation Division Symposium
- Business Management Institute
- Chinese-American Cultural Relations
- Delinquency Control Institute
- Employment Counselors' Training Institute
- Gourmet Institute
- High School Choral Workshop
- High School Band Workshop
- Highway Maintenance Institute
- Hospital Management Institute
- Hospital Supervisory Planning Institute
- International Conference on Spectroscopy
- International Home Economics Congress
- Law Enforcement Institute
- Liberal Arts Institute
- Library Building and Equipment Institute
- Liquified Petroleum Gas Institute
- Maryland Asphalt Paving Institute
- Maryland Education Conference
- Maryland Press Institute
- Maryland State Conference on Welfare
- Maryland Economic Education Workshop
- Maryland Traffic Institute
- Maryland Youth Traffic Safety Conference

## TYPES OF PROGRAM OFFERINGS

### TYPES OF PROGRAM OFFERINGS—Continued

Motor Fleet Supervisors' Institute  
Nursing Home Administration Institute  
Physicians Medical Symposium  
Police Professional Advancement Program  
Right-of-Way Conference  
Rotary District Assembly  
Space Education Institute  
Space Research and Technology Institute  
Workshop on Physical Fitness  
World Trade Seminar

For further information write to the Director of the Conferences and Institutes Division, University College, University of Maryland, College Park, Maryland, or telephone WARfield 7-3800, extension 7117.





# ADMISSION, CURRICULUM EVALUATIONS, AND ESTABLISHMENT OF CREDIT

## ADMISSION

**ADMISSION REQUIREMENTS:** Students who have never attended a college or university must have either an acceptable high school diploma or the high school equivalent. Graduates of approved high schools may not use the high school GED examination results to qualify for admission. Students who have attended another college or university must be in good academic standing (minimum "C" average in the final 12 hours and eligible for re-enrollment at the last institution) in order to enroll in University College.

**PROCEDURES FOR ADMISSION:** The following instructions apply to the several categories of students:

**HIGH SCHOOL GRADUATE:** This student must *immediately* request his high school to send an official transcript to the appropriate admissions office (see your education advisor for the correct address). The student will be allowed to register for one term pending review of his high school records.

**HIGH SCHOOL EQUIVALENT:** This student must have successfully completed the high school equivalent *before* enrolling with the University of Maryland. He must *immediately* request an official copy of his GED test report to be sent to the appropriate admissions office (see your education advisor for the correct address). The student will be permitted to register for one term pending clearance of his GED test scores.

The minimum requirement for the high school equivalent is completion of the high school level General Education Development Tests with the following scores: a standard score of 45 or above on each of the five tests or an average standard score of 50 on all five tests, with no score less than 40.

**COLLEGE TRANSFER STUDENT:** This student must *immediately* request that official transcripts from all colleges attended be sent directly to the appropriate office of admissions (see your education advisor for the correct address). The student will be allowed to register for one term pending review of his college transcripts.

Subject to the above entrance requirements of the University of Maryland, any adult, civilian or military, may enroll in appropriate University College courses. Credits thus earned may be transferred to other academic institutions, subject to the regulations of those institutions.

**SPECIAL STUDENTS:** Categories of special adult students include: (a) all students who have not successfully completed 12 semester hours with this University; (b) students who have not formally matriculated for a degree program; (c) students who plan to transfer their Maryland credits to another

## ADMISSION, CURRICULUM EVALUATIONS

institution; or (d) students who desire to enroll in Maryland courses exclusively for self-improvement.

**REGULAR STUDENTS:** A regular student in University College is an adult who is pursuing a degree with this College. Degree requirement may be completed wherever the necessary courses are available. Students who are fully matriculated in other schools or colleges of the University of Maryland may take courses through University College with the permission of their dean or advisor.

Admission requirements for part-time students who wish to become candidates for University College degrees are the same as for full-time students at the University. A person who desires to become a regular student must submit a formal application to the Director of Admissions together with high school record. For further information about admission as a degree-seeking student, consult your education advisor or a University representative.

**STUDENTS IN THE COLLEGE PARK EVENING DIVISION:** Students enrolled in the on-campus Evening Division at College Park must satisfy the same requirements as other campus students. An adult may be admitted as a special student in the College Park Evening Division under the same regulations as for off-campus special students. Civilian unmarried persons under the age of 21 may be admitted provided, prior to registration, they satisfy the admission requirements for regular students, as stated above.

Undergraduate students currently enrolled and registered in other colleges of the University may enroll in the College Park Evening Division provided they are in good standing and have the *written* permission of their dean to enroll in the specific course. Such a letter of permission must be presented each time the student registers. It is the student's responsibility to obtain this letter.

Except teachers seeking courses for certification and previously admitted University College students, undergraduate students matriculated in other colleges of the University who have been separated from the University for more than one semester must apply for readmission to the University before they can enroll in the Evening Division.

**ADMISSION TO GRADUATE SCHOOL:** Persons seeking admission to the Graduate School of the University are referred to page 25.

## CURRICULUM EVALUATIONS

Students planning to work toward a degree offered by University College should consult an *official University College representative* for assistance. For further information about counseling opportunities, see page 31.

**OFFICIAL EVALUATION (STATEMENT OF ADVANCED STANDING):** An Official Evaluation, or Statement of Advanced Standing, will be prepared, *but only upon request of the student*, by the Director of Admissions when the following conditions have been fulfilled:

## CURRICULUM EVALUATION, ESTABLISHMENT OF CREDIT

1. Submission of a formal Application for Admission which includes a high school record.
2. Submission of official transcripts (sent directly from the issuing institutions to the Director of Admissions) from all other institutions attended and official transcripts from military service schools where applicable.
3. Submission of official college level GED test reports from USAFI where applicable.
4. Completion of DD Form 295 in duplicate for military personnel.
5. Completion of twelve (12) semester hours of Maryland course work with a minimum grade average of "C". In certain cases, completion of 15 semester hours is required.

**UNOFFICIAL EVALUATIONS:** A tentative evaluation may be requested at any time by consulting an *official University College representative*. For further information about opportunities for consultation, see page 31.

Tentative evaluations are possible only when a student presents records (not necessarily transcripts) of courses and grades from other institutions attended, a record of the college-level GED test scores (if such tests have been taken), and a list of the advanced military service schools which he has successfully completed. With such records a University College counselor can give a reasonable estimate of the student's requirements in relation to the degrees administered by University College.

## ESTABLISHMENT OF CREDIT

**CORRESPONDENCE COURSES:** For the degrees administered by University College, a maximum of 12 semester hours of correspondence credit may be accepted provided: (1) the minimum grade earned is at least the equivalent of a Maryland "C"; (2) the course was administered by an accredited institution; and (3) the credit is acceptable by the institution conducting the correspondence course toward one of its own baccalaureate degrees. The University of Maryland does not offer correspondence courses of any kind.

United States Armed Forces Institute (USAFI) college-level correspondence courses may also be accepted for credit if the work is of acceptable quality. Credit will be granted provided *all lessons have been completed, submitted*, and the work has been validated by successful completion of the appropriate end-of-course examination. USAFI correspondence courses are offered at the freshman and sophomore levels only. No credit is allowed for USAFI self-study or group-study courses.

USAFI credit can be evaluated only upon receipt from USAFI, Madison, Wisconsin, or one of its field offices, of certification of the completion of college-level correspondence courses followed by the appropriate examinations. USAFI certifies for University of Maryland students the number of correspondence lessons completed. Documents are not official if sent first to the student or education advisor.



## ESTABLISHMENT OF CREDIT

The following regulations govern acceptance of correspondence work taken either with USAFI or other accredited colleges and universities:

- a. A maximum of twelve (12) semester hours of correspondence credit may be accepted by the University.
- b. A student planning to enroll in correspondence study, either with USAFI or another institution, must first check with the Dean of University College concerning acceptability of the course(s) in the curriculum being pursued. It is the student's responsibility to obtain the Dean's approval.
- c. The University of Maryland will not accept correspondence credit earned in public speaking or foreign languages.

**CREDIT BY USAFI GED TESTS:** To be eligible for college-level GED credit, a student must have completed the tests with acceptable scores *prior to September, 1, 1963, and* his first enrollment with Maryland must have taken place *prior to that date*. A student who first enrolls with Maryland after *September 1, 1963, or*, if already enrolled, takes GED college-level tests after that date will not receive credit based on the tests.

**OTHER CREDIT BY EXAMINATION:** Under limited circumstances, credit toward a baccalaureate degree may be established by examination provided the individual can exhibit an area of competence. A request to establish credit by examination must be approved by the head of the academic department, the dean of the academic college in which the examination is offered, and by the dean of the college in which the student is enrolled. Not all academic departments permit credit by examination. A student may not establish foreign language credit by examination in freshman or sophomore courses of his native language, the one which he first learned to read and write as a child through regular schooling. It is not necessarily the language of his parents or of the country in which he was born.

With the exception of the USAFI GED tests, no more than twenty (20) semester credits can be granted by examination. The fee for establishing credit by examination is \$5.00 per semester hour of credit. Applicants must have completed at least 12 semester credits with the University of Maryland with a minimum average grade of "C" before making application for an examination to establish credit. Credit by examination will not normally be accepted for any of the final 30 semester credits leading to graduation. Non-degree students are ineligible to establish credit by examination in a University of Maryland course. The maximum of GED and other examination credit is 24 semester hours.

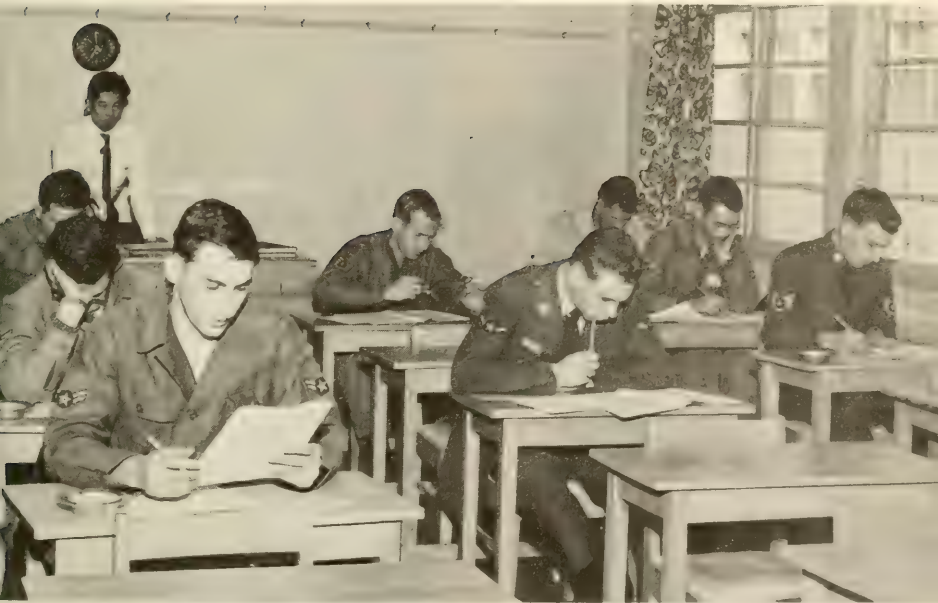
**TRANSFER CREDIT FOR FORMAL CLASSROOM COURSES:** The University of Maryland will accept transfer credit for courses taken with other accredited colleges and universities under the following conditions:

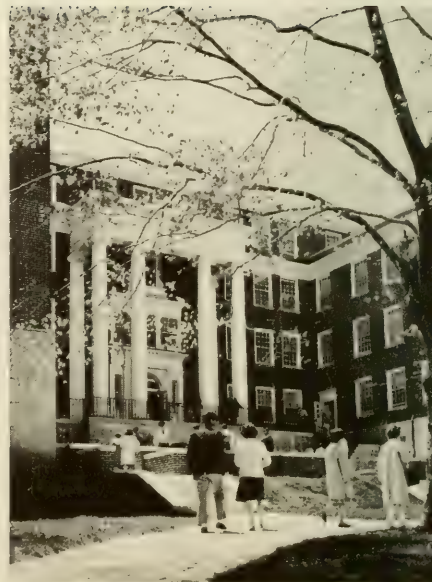
- a. The courses for which transfer credit is sought must be applicable to the student's curriculum.
- b. Each grade received must be a "C" or higher under a marking system equivalent to that of the University of Maryland.



## ESTABLISHMENT OF CREDIT

- c. The institution must grant credit for the courses toward one of its own baccalaureate degrees.
- d. A properly certified transcript must be sent by the institution directly to the appropriate office of the Director of Admissions, University of Maryland.
- e. Written approval of the Dean of University College must be obtained for any course taken within the last 30 semester hours of the student's degree requirements.
- f. A student with junior standing (56 hours of academic credit) will not receive transfer credit for *elective* courses taken at a junior college. To be eligible for transfer credit from an *accredited* junior college, a course must be one that is required by the student's curriculum.





# CURRICULA AND CURRICULAR REQUIREMENTS

Courses offered through University College may be applied to the Bachelor of Arts degree in General Studies or the Bachelor of Science degree in Military Studies. In addition, they may be applied to the degree curricula of other colleges and schools of the University, provided such courses fit into the particular curriculum which a student is pursuing. Every student is, therefore, responsible to the college or school in which he is matriculated as a degree-seeking student.

Counseling by a student's dean prior to registration is extremely important. For further information, see the discussion of "Counseling" on page 31 and the explanation of "Curriculum Evaluations" on pages 12 and 13.

In addition to the general applicability of University College courses, certain colleges permit part-time students to complete their curricular requirements through course offerings of University College or through a combination of enrollments in evening courses of University College and in offerings of specific departments of the particular college.

## UNIVERSITY COLLEGE

### THE BACHELOR OF ARTS DEGREE IN GENERAL STUDIES

The General Studies curriculum provides an opportunity for qualified adult students to enroll in a degree program which permits concentrations principally in the social sciences and the humanities. This degree fosters the acquisition and assimilation of a useful body of knowledge related to the student's intellectual life, his community life, and his career.

As indicated, this curriculum is designed specifically for adult part-time students. It requires a minimum of 120 semester hours of academic credit for graduation. It does not require physical education or ROTC. Opportunity is provided for programs of study in the area of commerce (business administration) as well as in the social studies and humanities. This is the only University College degree program in which students will be eligible to enroll on or after September 1, 1963.

*Students matriculated in other colleges of the University of Maryland on campus may not transfer to the Bachelor of Arts curriculum in General Studies and pursue this curriculum as full-time on-campus students.*

The General Studies curriculum is as follows:

FRESHMAN AND SOPHOMORE YEARS	Credit Hours
Eng. 1, 2, 3, 4 .....	12
Math. or Science .....	6

UNIVERSITY COLLEGE

*Foreign Language .....	12
Government and Politics I .....	3
Sociology I or Psychology I or Philosophy I, or Economics 31	3
History 5, 6 .....	
Speech 1 .....	
Electives .....	
	6
	3
	15
	<hr/>
	60

JUNIOR AND SENIOR YEARS	<i>Credit Hours</i>
Primary Concentration in one department .....	18
Secondary Concentration in one or more departments .....	24
Electives .....	18
	<hr/>
	60

**PRIMARY AND SECONDARY AREAS OF CONCENTRATION:** A student will select Primary and Secondary Areas of Concentration. These areas may include courses from the departments of Economics, English, History, Government and Politics, Sociology, Geography, Psychology, and Commerce (Business Administration). In special cases, and with permission of the Dean, the student may select a Primary Concentration in another academic area. Science or engineering courses cannot be used in either Area of Concentration.

**A. PRIMARY AREA:** A student must select 18 hours of courses in a single department listed above. Of these, 15 hours must be in 100-level (junior-senior) courses. No course with a grade less than "C" may be included in the Primary Area of Concentration.

**B. SECONDARY AREA:** (1) Courses must be selected from one or more (normally not more than two) of the departments named above. The courses must complement each other and must constitute a coherent block of courses with emphasis on the principle of area studies. They must bear a functional relationship to the Primary Concentration in terms of the student's degree objective, as approved by a University College advisor. (2) At least 21 of the 24 hours must be in 100-level courses. (3) Professional courses in the field of education and not more than 6 hours of appropriate upper-level military service school credits may be placed in the Secondary Concentration provided the principles enunciated above are observed.

**c.** Courses below the 100-level in a student's Primary or Secondary Area will

\* Students following the Commerce Concentration may substitute Principles of Accounting (6 hours) and Principles of Economics (6 hours) for the foreign language requirement.



in no case include the basic freshman and sophomore requirements listed on pages 17 and 18.

D. At least one third of the courses in the Primary (6 semester hours) and Secondary (8 semester hours) Areas must be taken at the University of Maryland.

E. ELECTIVES: (1) They must be consistent with general University policies regarding admissibility of transfer courses and must be related to the student's intellectual life, his community life, and his career. (2) At least 6 elective hours must be in the humanities. (3) At least one third of the 33 hours of electives must be in 100-level courses.

### ADDITIONAL DEGREE REQUIREMENTS

1. Up to 12 semester hours of credit are permitted for successful completion of selected advanced military schools (such as the Army Language School).

2. The maximum combined examination credit (including GED credit), correspondence credit, and service school credit may not exceed 36 semester hours.

3. Students following a Primary Concentration in Commerce may substitute Principles of Accounting (6 hours) and Principles of Economics (6 hours) for the foreign language requirement. This is the only exception to the 12-hour foreign language requirement.

4. Students following the Primary Concentration in Commerce who complete BA 20, Principles of Accounting, must also complete BA 21 to receive credit for BA 20.

5. USAFI College Level GED Tests: Up to 24 hours of GED test credit may be granted to Armed Forces personnel who were enrolled with the University of Maryland prior to September 1, 1963, and who took the tests prior to that date. See "Credit by USAFI GED Tests" on page 14 of this catalog.

6. A *minimum* of 30 semester hours must be completed in residence with the University of Maryland for a baccalaureate degree. Residence credit is granted for courses taken at University College centers in the United States and overseas.

7. The *last 30 consecutive hours* must be completed in residence. In case of hardship, however, an adult student may petition his dean in writing to take up to 6 of the last 30 hours at some other recognized institution or by examination. The 6-hour limitation applies to the combined total of credits for the following: (1) classroom or correspondence courses taken at other accredited institutions; (2) credit for college level General Education Development Tests taken within one calendar year of completion of degree requirements and prior to September 1, 1963; and (3) other examination credit.

8. A minimum average mark of "C" (2.0) in all courses taken with the University of Maryland is required for graduation.

9. Physical education and air science requirements are waived for adult evening students.

10. The completion of 12 hours of foreign language is required, except as noted elsewhere, in order to qualify for a University College degree. A student

## UNIVERSITY COLLEGE

who completed two years of a foreign language in high school will not receive credit in college for the first semester of the introductory course in that language unless a period of at least four years has elapsed between the date of high school graduation and the date of enrollment in the college language course. The 12-hour language requirement should generally be satisfied in one language; however, 6 hours in each of two languages may be permitted. Credit will not be allowed for the first semester only of an introductory course in a language; a sequence of at least two semesters must be taken.

11. Credit for 56 academic hours entitles a student to junior standing. Senior standing requires 86 academic hours.

12. A maximum of 12 semester hours of correspondence work (except in public speaking and foreign languages) will be accepted from approved institutions. Credit for USAFI college level correspondence courses is awarded only at the freshman-sophomore levels. Students should obtain approval before registering for a correspondence course. The University of Maryland does not offer correspondence courses.

13. Transcripts from other accredited colleges and Service schools and results of GED tests and USAFI course grades, including lesson completions, must be sent by the issuing institution directly to the Director of Admissions and not to University College.

14. It is the responsibility of the student to remove an "I" from his record. The "I" becomes "F" if it is not removed by the end of the next semester or term in which the course is again offered at the same off-campus center. All "I's" revert to "F's" at time of graduation.

15. A course retaken because of an "F" or "I", must be retaken under the same conditions under which it was originally taken. For example, a classroom course cannot be "made up" by completing a correspondence course in the subject.

16. Diploma applications for students in the United States and the Atlantic Division must reach the Registrar at least 8 weeks prior to completion of last course. Students in Europe and the Far East will conform to the requirements of those divisions.

17. To do graduate work, a student must elect a sufficient number of 100-level courses within a single department to qualify for admission to the graduate school. The usual number of credits required for entrance is about 24 hours with a minimum grade average of "B". However, the quality of the work is as important as the number of courses. A student desiring to pursue graduate studies should consult the requirements of the graduate school of his choice and plan his program accordingly.

18. Students enrolled in the off-campus program may be authorized to come to the campus to complete their degree requirements. For further information, see the explanation of "On-Campus Full-time Study" on page 4 of this catalog. The normal maximum course load is 18 hours for a semester and 9 hours for a summer school.

19. A student who enrolls with Maryland under one curriculum may, with the

approval of the Dean, follow that program although a revised curriculum is adopted later; or he may elect to take courses in the later curriculum as substitutes for those eliminated from the older curriculum.

20. Credits from other colleges or from USAFI are not assigned to a student not currently enrolled with Maryland. Such credits are held in abeyance until the student re-enters the Maryland program.

21. A student who has taken Maryland courses overseas should notify the appropriate overseas division office prior to his rotation date so that his records can be returned to College Park.

22. A Maryland student who desires to take work with a junior college must obtain permission from the Dean of University College prior to enrolling in such courses. (See page 15, paragraph f., for regulations governing junior college transfer credits).

## THE BACHELOR OF SCIENCE DEGREE IN MILITARY STUDIES

The Bachelor of Science in Military Studies curriculum is included for the information of students who enrolled in it prior to September 1, 1963. No enrollments will be accepted in this curriculum after that date.

The Military Studies curriculum is as follows:

FRESHMAN YEAR	<i>Credit Hours per Semester</i>	
	<i>I</i>	<i>II</i>
*English 1, 2. Composition and American Literature.	3	3
*Sociology 1. Sociology of American Life or	}	3
Philosophy 1. Philosophy for Modern Man or		
Psychology 1. Introduction to Psychology		
**Government & Politics 1. American Government ..	3	—
***Math 10, 11. Algebra, Trigonometry and Analytic		
Geometry .....	3	3
Foreign Language .....	3	3
*Science .....	3	3
	<hr/> 15	<hr/> 15

\* Credit by examination may be permitted for these courses upon successful completion of the college level General Educational Development tests prior to September 1, 1963. Students who receive 12 credits in English by this means are required to complete English 8 or 14. The credit earned in either of these courses may be used as elective credit.

\*\* Credit permitted for GED Test II if successfully completed prior to September 1, 1961, by student enrolled prior to that date.

\*\*\* Mathematics 18 and 19 may be substituted for Mathematics 10, 11, or 5, 6. The excess credits may be placed in lower-division electives.

# UNIVERSITY COLLEGE

## SOPHOMORE YEAR

### *Credit Hours per Semester*

	<i>I</i>	<i>II</i>
*English 3, 4. Composition and World Literature . . .	3	3
History 5, 6. History of American Civilization . . .	3	3
Economics 31, 32. Principles of Economics . . . . .	3	3
Speech. Public Speaking . . . . .	3	—
Foreign Language . . . . .	3	3
Elective . . . . .	—	3
	<hr/> 15	<hr/> 15

## JUNIOR YEAR

### *Credit Hours per Semester*

	<i>I</i>	<i>II</i>
Military Studies 147, 148. Military History . . . . .	3	3
Military Studies 151. Military Logistics . . . . .	3	—
Military Studies 149. Military Law . . . . .	—	3
†Advanced Air Science . . . . .	3	3
Electives . . . . .	6	6
	<hr/> 15	<hr/> 15

## SENIOR YEAR

### *Credit Hours per Semester*

	<i>I</i>	<i>II</i>
**Military Studies 152. Military Leadership . . . . .	—	3
Military Studies 153. Military Policy of the United States . . . . .	3	—
Two of the following:		
Government and Politics 101. International Political Relations	3	3
Government and Politics 106. American Foreign Relations		
Government and Politics 154. Problems of World Politics		
Government and Politics 197. Comparative Governmental Institutions		
**Advanced Air Science . . . . .	3	3
Electives . . . . .	6	6
	<hr/> 15	<hr/> 15

**SUMMARY OF DEGREE REGULATIONS:** The following is a summary of special regulations and requirements affecting the degree of Bachelor of Science in Military Studies. In addition, Items 5 to 22 of the "Additional Degree Regulations" that follow the General Studies curriculum in the preceding pages apply also to Military Studies students.

\* See footnote page 21.

\*\* Credit allowed to those who have served as commissioned or warrant officers in the Armed Forces for at least one year.

† Credit allowed for commissioned or warrant officer service in the Armed Forces.



## ARTS & SCIENCES, BUSINESS & PUBLIC ADMINISTRATION, EDUCATION

1. The requirement for graduation is 120 semester hours, exclusive of Basic ROTC and Physical Activities. Thus, for students who under an older curriculum received 16 hours of credit for Basic ROTC and Physical Activities, a total of 136 semester hours is required for the Military Studies degree. Credit for Advanced ROTC is applicable to the 120 hours.
2. Credit for the college level GED tests and other examinations is limited to a total of 24 semester hours. The GED tests must have been completed prior to September 1, 1963. For further information, see pages 13-15 on "Establishment of Credit."
3. Not more than 21 semester hours of credit may be earned through correspondence work and approved courses at certain advanced Service schools. (The limit is 17 semester hours for those who enrolled in the Bachelor of Science degree program prior to September, 1958.)
4. At least 6 semester hours of the electives specified in the Military Studies curriculum must be in upper-division (junior-senior) courses. At Maryland, such courses are in the 100 series.

## COLLEGE OF ARTS AND SCIENCES

Degrees in the College of Arts and Sciences are based primarily upon major and minor concentrations. The student must meet the conditions set forth for both major and minor or required supporting courses by the department in charge of his work. These requirements vary from one department to another. The regulations of the College of Arts and Sciences as well as a complete listing of majors offered in that College may be found in the catalog of the College of Arts and Sciences, available through the Office of the Dean.

## COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

The College of Business and Public Administration is accredited by the American Association of Collegiate Schools of Business. It comprises seven departments offering nineteen curricula. For details of curricula, the student should consult the catalog of the College of Business and Public Administration, available through the Office of the Dean.

## COLLEGE OF EDUCATION

The College of Education offers curricula for students of education and for teachers in-service. Undergraduate education curricula and advisors are as follows:

### ACADEMIC EDUCATION—

English—Marie D. Bryan

Foreign Languages—Henry Mendeloff

## COLLEGE OF EDUCATION

Mathematics—John R. Mayor, H. L. Garstens

Natural Sciences—David Lockard

Social Sciences—Robert G. Risinger, Jean D. Grambs

Speech—Warren L. Strausbaugh (minor only)

AGRICULTURAL EDUCATION (under the College of Agriculture)—V. R. Cardozier

ART EDUCATION—E. L. Longley, Jr.

BUSINESS EDUCATION—Arthur S. Patrick

CHILDHOOD EDUCATION—James L. Hymes, Jr., Margaret A. Stant

ELEMENTARY EDUCATION—Alvin W. Schindler, Marie Denecke, Glen O. Blough, Leo W. O'Neill, William J. Massey, Philip Weaver, Katherine Evans

HOME ECONOMICS EDUCATION—Mabel Spencer

INDUSTRIAL EDUCATION—Donald Maley, Paul E. Harrison, Irving Herrick, George R. Merrill, William F. Tierney, Edmund Crosby, Carl Schramm, Joseph Leutkemeyer

MUSIC EDUCATION—Beula Eisenstadt

NURSERY SCHOOL—KINDERGARTEN EDUCATION—James L. Hymes, Jr., Margaret A. Stant

PHYSICAL EDUCATION—(Men)—Albert W. Woods

PHYSICAL EDUCATION—(Women)—Wilda Pickett

SPECIAL EDUCATION—Jean R. Hebel, Paul Renz

**GRADUATE WORK:** Areas in which graduate work is offered include adult education, business education, educational administration and supervision, curriculum and teaching, elementary education, guidance, higher education, history, philosophy, comparative education, home economics education, human development, industrial arts, music education, secondary education, and vocational-industrial education. Graduate-level courses in education are offered only on the Baltimore and College Park campuses.

Specific curriculum requirements may be obtained from the College of Education catalog or the Graduate School catalog.

**OFF-CAMPUS COURSES IN EDUCATION:** University College offers courses in education for in-service teachers to permit them to complete a part of the work required for a bachelor's degree, to enable graduate students to work toward advanced degrees, and to fulfill or renew the Maryland State Department of Education certification requirements. Education courses are offered most frequently at the Baltimore Center and at various other centers established in cooperation with the counties of Maryland.

Part-time adult students matriculated in the College of Education may complete many of their general academic course requirements through University College. Students should consult their College of Education advisors prior to registration as to the applicability of specific courses.

## GRADUATE SCHOOL

Master's and doctor's degrees are awarded by most of the departments at the University. Graduate programs are administered by the Graduate School in cooperation with the various departments. Students are admitted to the Graduate School only if (1) they hold baccalaureate degrees and (2) their previous work is in quality and extent acceptable to the department in which they desire to work. A "B" average is required.

Students must have been admitted to the Graduate School prior to registration in any course they seek to take for graduate credit. Courses open to both advanced undergraduate and graduate students, numbered 100 to 199, may not later be applied to graduate work if the student were not admitted to the Graduate School when he registered. *The deadline for filing applications and supporting documents is September 1 for the Fall Semester, January 1 for the Spring Semester, and June 1 for the summer session.*

A student pursuing a graduate program should keep constantly in touch with the graduate advisor of his major department.

It is difficult to proceed toward graduate degrees at off-campus centers conducted by University College. Adequate library and laboratory facilities are not always available and many departments require that a certain number of courses be completed on campus. Furthermore, graduate work is highly specialized, and the number of students desiring particular courses at a given time and center is seldom large. If the circumstances are favorable, however, graduate work in some fields can be offered off campus.

Graduate degrees are awarded at the completion of an individually planned program of study. The student must register for each course in full consultation with the departmental advisor concerned. In general, the master's degree is based upon a division of work between a major and a minor. A minimum of half the required courses for this degree must be taken in courses numbered 200 or above. These courses are open only to graduate students. The remaining courses required for the degree may be taken in approved courses numbered between 100 and 199. Courses taken for undergraduate credit may not be applied toward graduate degrees. Information regarding the requirements for all advanced degrees may best be obtained from the Graduate School catalog and by consultation with the head of the department concerned.

University College arranges selected advanced course programs at several centers. Graduate courses in the sciences are offered at the National Bureau of Standards, Naval Ordnance Laboratory, Naval Research Laboratory, and Patuxent (Naval Air Test Center).

Graduate courses in government and politics are offered at the Pentagon. Graduate courses in education are offered through University College on the Baltimore campus and through the College of Education on the College Park campus.

### COLLEGE OF HOME ECONOMICS

The College of Home Economics serves Maryland and the surrounding area with its program for the education of women and men interested in social, economic, scientific, and aesthetic aspects of homemaking and of family living in relation to the community. The educational offerings of the College are planned to help students function effectively and creatively as individuals, as family members, and as responsible citizens; to prepare them for positions for which home economics is a major or minor preparation; and to promote an appreciation and utilization of the findings of research. The College is concerned with contributing to the education for home and family life of women and men enrolled in other schools and colleges as well as those majoring in home economics.

The College of Home Economics is organized into the Departments of Food, Nutrition, and Institution Management; Home Management; Practical Art and Crafts; and Textiles and Clothing. The curricula offered are: general home economics; applied art (merchandising, advertising, crafts, costume and interior design); home economics extension; food and nutrition and related science; home economics education; home management; institution management; textiles and clothing; and textiles and related science.

The over-all function of home economics is to integrate the contributions of the physical and biological sciences, the social sciences, psychology, philosophy, and art in the treatment of all phases of home and family life, to the end that they are used by families in all parts of society and by the agencies serving families.

Areas in which graduate work is offered include general home economics, food and/or nutrition, and textiles and clothing. Specific curriculum requirements may be obtained from the College of Home Economics catalog or the Graduate School catalog.

Persons wishing to pursue one of the undergraduate curricula in evening or off-campus offerings provided by University College are urged to confer with the Dean of Home Economics relative to curriculum offerings. General studies required in all home economics curricula are presently available to students having met the admission requirements of the University.

The degree of Associate of Arts is offered for those individuals seeking a general family-life studies program, or courses in home economics may be applied toward the General Studies Curriculum in University College. A steadily expanding program in the several areas of home economics meets the needs of both degree and non-degree seeking students.

### SCHOOL OF NURSING

A program for Registered Nurses leading to the degree of Bachelor of Science in Nursing is offered by the School of Nursing in cooperation with University College.



## SCHOOL OF NURSING

The specific objectives of this program are to bring up to full collegiate level the basic nursing preparation of graduates of three-year diploma schools by supplying required general education, clinical, and public health nursing courses.

Registered nurses who have completed a three-year program in an approved school of nursing, and have successfully passed the Maryland State Board of Examination for Registration of Nurses, or the equivalent, and have qualified as registered nurses and meet the admission requirements of the University of Maryland, may pursue studies in the School of Nursing leading to the degree of Bachelor of Science in Nursing.

**ADVANCED STANDING CREDIT IN NURSING:** Advanced standing of 30 credits in nursing is determined through the review of the hospital school record and by the results of the Graduate Nurse Qualifying Examination of the National League for Nursing.

**PART-TIME STUDY:** For the students who are employed on a full-time basis, the normal registration is for 6 semester hours during a 16-week semester. Only exceptional students will be allowed to register for more than 6 semester hours and not more than 9 semester hours, and then only with the approval of an official University advisor.

**THE CURRICULUM:** The curriculum leading to the Bachelor of Science degree in Nursing is as follows:

### GENERAL REQUIREMENTS

Eng. 1. Composition and American Literature .....	3
Eng. 2. Composition and American Literature .....	3
Eng. 3 and 4. Composition and World Literature .....	6
G & P 1. American Government .....	3
Soc. 1. Sociology of American Life .....	3
H. 5. History of American Civilization .....	3
H. 6. History of American Civilization .....	3

### SPECIAL REQUIREMENTS

Microb. 1. Microbiology .....	3 or 4
Microb. 101. Pathogenic Microbiology .....	3 or 4
Chem. 1 and 3. General Chemistry or .....	4, 4
Chem. 11 and 13. General Chemistry .....	3, 3
Zool. 55. Development of the Human Body .....	2

### NURSING REQUIREMENTS

Nurs. 156. Public Health Nursing I .....	5
Nurs. 154. Principles of Management in a Nursing Unit .....	2
Nurs. 158. Biostatistics .....	3
Nurs. 153. Public Health .....	2

NURSING, PHYS. ED., RECREATION & HEALTH

Nurs. 199. Pro-Seminar ..... 2  
Nurs. 159. Clinical Practicum ..... 2

ADDITIONAL REQUIREMENTS

C. Ed. 110. Child Development III ..... 3  
Hea. 120. Methods and Materials of Health Education ..... 3  
Psych. 1. Introduction to Psychology ..... 3  
Speech 1. Public Speaking (or Speech 103) ..... 3  
Psych. 110. Educational Psychology ..... 3  
Nut. 123. Nutrition for Health Services ..... 3  
Soc. 164. Family and Society ..... 3  
Soc. 105. Cultural Anthropology ..... 3  
P.E. 160. Theory of Exercise ..... 3

NURSING ELECTIVES

Nurs. 189. Workshops and Institutes (electives may be selected,  
after consultation with the adviser) ..... 1-6  
Foreign language may also be used for electives.

A total of 128 semester credit hours are required for the degree of Bachelor of Science in Nursing. A minimum of 30 semester hours must be completed in residence for a baccalaureate degree. Credit earned through University College is residence credit.

**PUBLIC HEALTH FIELD EXPERIENCE:** Due to the maturity and background of the registered nurse student, eight weeks of public health field experience in Anne Arundel County, Montgomery County, or Prince George's County is required rather than the thirteen weeks which is required in the basic collegiate program. Registered nurses who have been employed in public health nursing, or have had supervised experience as a student, should submit an official record of this experience for evaluation.

For further information, telephone PLaza 2-1100, Extension 292, in Baltimore.

COLLEGE OF PHYSICAL EDUCATION,  
RECREATION AND HEALTH

This college provides professional preparation leading to the bachelor's degree in the following general areas: physical education, recreation, health and safety education, and physical therapy. Moreover, in conjunction with the Graduate School and the College of Education, graduate programs leading to both master's and doctor's degrees are available in physical education, recreation and health. A research laboratory is maintained for faculty members and selected graduate students who are interested in investigating the effects of exercise and various physical education activities upon the body.

## PHYS. ED., RECREATION AND HEALTH

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as prescribed by the College of Physical Education, Recreation, and Health, including air science and/or required physical activities. Candidates enrolled in the College of Education with a minor in Physical Education or Health Education receive a Bachelor of Science degree upon fulfillment of the requirements as prescribed by that college.







# REGISTRATION, FEES AND GENERAL INFORMATION

## REGISTRATION

**REGISTRATION INFORMATION:** Each semester, University College State-side issues two publications containing the schedules of evening classes. The first includes all courses offered at College Park in the evening as well as courses offered at military installations and other locations throughout the State. A second schedule of classes is issued for Pentagon courses only. Schedules are available, upon request, from the University College offices in College Park or Baltimore, approximately 30 days prior to the beginning of the new semester.

**REGISTRATION PERIODS:** An official registration period is scheduled at each center, and all students are expected to complete their registrations on the day or days designated. This includes filing of all registration forms and payment of all fees. Students who fail to register within the prescribed days will be charged a late fee of \$10.00.

Only in exceptional cases will a student be permitted to enter a class later than one week after the beginning of instruction.

**STUDENT RESPONSIBILITY:** It is the student's responsibility to know the administrative and academic policies with which he must comply. This catalog outlines those policies and contains information about admission and registration procedures and curricular programs available through University College. For further information, the student should consult an official University College advisor.

**COUNSELING:** It is very important for the student to obtain counsel in planning his program. A variety of opportunities are provided for counseling, but *it is the student's responsibility to take the initiative in requesting guidance.*

Most military education centers have education advisors who can give general information about University of Maryland courses, such as scheduled course offerings and general admission requirements.

University representatives make regularly scheduled visits to certain military installations in the Washington-Baltimore area for academic counseling. They are also available for academic counseling during registration periods. For further information, check with your education center or with University College, College Park, telephone WARfield 7-3800, extension 7111, or Baltimore, PLaza 2-1100, extension 292.

University College offices are open for counseling from 9:00 a.m. to 8:00 p.m., Mondays through Thursdays, and from 9:00 to 4:30 on Fridays, in either the College Park or Baltimore offices. Students desiring counseling should make a prior appointment.

Persons enrolling in professional education courses should obtain counsel from an advisor in the College of Education prior to registration.

REGISTRATION, CHANGES

**COURSE LOADS:** For 16-week courses the normal course load is 6 semester hours. Only under exceptional circumstances will students be allowed to take more than 6 semester hours with approval of an official *University* advisor.

For courses given in 8-week terms, the normal student load is 3 semester hours. Only under exceptional circumstances will students be allowed to take more than 3 semester hours with approval of an official *University* advisor.

**APPROVAL OF COURSES:** Students are expected to meet course prerequisites prior to registration. Approval of exceptions must be secured from the dean of the student's degree-granting college prior to registration.

All students matriculated in other colleges of the University must secure the approval of their respective deans prior to registering for any University College course.

CHANGES IN REGISTRATION

**WITHDRAWAL FROM ALL COURSES:** Any student compelled to withdraw from *all* University of Maryland courses must submit written notice of withdrawal or complete "Application for Withdrawal From All Courses" UM Form W2Y, giving reasons therefor. (A student dropping one or more courses but continuing with at least one course should refer to the paragraph on "Dropping Courses".) Requests must be sent to the Dean of University College or Director of the Division in which the student is taking courses. Failure to give notice will result in an automatic failing grade and in forfeit of any refund to which the student would otherwise be entitled. No withdrawal will be honored unless it is received prior to the last week of classes.

The effective date for computing withdrawal refunds will be the date on which notification is received in a University College office. (In the Atlantic Division only, refunds will be based on the date notification is received by the local education center).

Students withdrawing from University College courses will receive a refund of tuition charges, less matriculation, laboratory, and other special fees, in accordance with the following schedule:

16-week Semester	
<i>Period from Date Instruction Begins</i>	<i>Refundable</i>
Two weeks or less	80%
Between two and three weeks	60%
Between three and four weeks	40%
Between four and five weeks	20%
Over five weeks	0
8-week Term	
<i>Period from Date Instruction Begins</i>	<i>Refundable</i>
One week or less	70%
Between one and two weeks	50%
Between two and three weeks	20%
After three weeks	0

**DROPPING A COURSE:** A part-time student enrolled in more than one course, who wishes to drop one but continue with the other(s), must notify immediately, either personally or in writing, the Dean of University College or Director of the Division in which he is taking courses. Failure to give such notice will result in an automatic failing grade. University of Maryland Form R6Y is used for dropping courses.

A student may not drop one or more courses after the end of the 5th week of a 16-week semester or the end of the 3rd week of an 8-week term unless he submits a letter giving legitimate reasons for his action. Failing work is not considered a legitimate reason for dropping a course after those dates.

The only instance where the student shall be eligible for a partial refund is when he officially drops a course or courses prior to the end of the second week of 16-week classes or the end of the first week of 8-week classes. Such students shall be eligible for an 80% refund.

**OTHER CHANGES IN REGISTRATION:** Once the student has officially registered, he cannot substitute one course or section of a course for another or add one or more courses after the second week of 16-week classes or the first week of 8-week classes.

The student cannot change his course registration from credit to audit after the end of the 5th week of a 16-week course or the end of the 3rd week of an 8-week course.

## FEES

The following fees generally pertain to University College. For further information regarding fees, the student is referred to the University of Maryland Bulletin, "An Adventure in Learning," and to the respective schedules of course offerings for each term or semester.

Undergraduate Matriculation Fee .....	\$10.00
Payable at the time of first registration only by all regular undergraduate and special students.	
Graduate Matriculation Fee .....	\$10.00
Payable at the time of first registration only by all fully admitted graduate students.	
Tuition Fee per Semester Hour .....	\$15.00
Tuition fees are identical for both undergraduate and graduate part-time course work and are payable in full at the time of registration.	
Late Registration Fee .....	\$10.00
All students are expected to complete their registration during the regularly scheduled registration periods. Those who do not will be charged the late registration fee.	

## FEES

<b>Change in Registration Fee</b> .....	<b>\$ 5.00</b>
Payable when a student, enrolled in University College courses, wishes to substitute one course for another or one section of a course for another or add a course after the first week of classes. This fee is not charged to students who drop a course but do not substitute another in its place.	
<b>Penalty Fee</b> .....	<b>\$ 5.00</b>
Payable for checks which have been returned by a bank for insufficient funds, post-dating, or for stop-payment or alteration, etc.	
<b>Special Examination Fee per Semester Hour</b> .....	<b>\$ 5.00</b>
Payable by degree-seeking students who wish to establish credit by examination with the University of Maryland.	
<b>Graduate Education Student Testing Fee</b> .....	<b>\$ 5.00</b>
Payable by all new graduate students in education at the time of first registration. During the first semester of graduate work all students are required to take a test battery. For further information, consult the College of Education.	
<b>Transcript Fee</b> .....	<b>\$ 1.00</b>
The first copy of a transcript will be issued free of charge. For each subsequent transcript the fee of \$1.00 must be paid prior to the issuance of the transcript.	
<b>Baltimore Student Union Fee</b> .....	<b>\$ 3.00</b>
Payable by all part-time adult students taking courses in the Baltimore city center. This fee is payable even though the student may have paid a full-time student union fee at College Park. Students in Baltimore registering for 12 or more semester hours will pay a full-time fee of \$20.00.	
<b>Graduation Fee for Bachelor's Degree</b> .....	<b>\$10.00</b>
The student should file an application for Diploma at the time of registration for his last course. He will be billed later for the graduation fee.	
<b>Graduation Fee for Master's Degree</b> .....	<b>\$10.00</b>
The student should consult his graduate advisor concerning the time to apply for his diploma.	
<b>Graduation Fee for Doctor's Degree</b> .....	<b>\$50.00</b>
Payable at the time of application for the diploma. The student should consult his graduate advisor concerning the proper time to make application.	

**LABORATORY FEES:** Laboratory fees are payable for a variety of courses, the amounts varying from course to course. The exact fees are included with the courses listed in the appropriate catalogs and in each Schedule of Course Offerings.

Laboratory fees will be charged whenever the availability of personnel, facilities, and other factors make it possible to offer laboratory instruction. If equipment other than that belonging to the University of Maryland is used, laboratory fees may not be charged, depending upon the arrangements that can be made with the cooperating party.



## FEES, GENERAL INFORMATION

**FEES FOR CONFERENCES AND INSTITUTES:** Fees for conferences, institutes, and short courses will be determined in terms of the cost of each such program. For further information about such fees, contact the Conferences and Institutes Division of University College.

**PAYMENT OF FEES:** All fees are payable in full at the times specified. The University has no provisions for deferred payments. All checks, money orders, or postal notes should be made payable to the University of Maryland. Penalty for returned checks resulting from insufficient funds, closed accounts, stopped payment, etc.: \$5.00 each check.

**DEFINITION OF STATE OF RESIDENCE:** Adult students, enrolling in the full-time day program of the University, are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least six months provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the six month period referred to above except in those cases in which the adult was domiciled in Maryland for at least six months prior to his entrance into the armed services and was not enrolled in any school during that period. The word domicile as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

## GENERAL INFORMATION

**RESIDENCE CREDIT:** Since both the instructors and courses in University College are approved by the appropriate department heads and deans, and since they meet the same academic and faculty standards as do campus courses, University College courses carry residence credit identical to that given for regular campus courses regardless of the geographical location and time of day in which they are offered.

**DEFINITION OF CREDIT UNIT:** The unit of credit is the semester hour, which represents 16 hours of classroom work plus required outside preparation.

**ATTENDANCE:** Regular attendance is expected of all students. Whenever possible the student should notify the instructor *beforehand* when he will have to be absent. In any case, the student should make arrangements with his instructor to make up any classwork missed.

If the student is absent for more than one-fourth of the class meetings, he should immediately process a withdrawal from the course in order to avoid receiving a failing grade (see the section on Withdrawals). If the student has been present for at least 75% of the class sessions but cannot be present for the final session or two, he may request an "Incomplete" grade from the instructor.

**REPEATED COURSE:** If a student repeats a course, the last grade he receives is final. Normally, the student may repeat a course only once.

## GENERAL INFORMATION, GRADING SYSTEM

**CANDIDATES FOR GRADUATION:** When the student is within 15 semester hours of graduation, he should inform his advisor in the appropriate division of University College so that an official graduation review can be made to determine his remaining requirements. He must complete an *Application for Diploma* and submit it to the Registrar's Office at least eight weeks prior to the date on which he plans to complete his degree requirements.

**RETURN OF STUDENT RECORDS TO COLLEGE PARK:** Records of each student participating in the European, Far East, or Baltimore Divisions are kept in the respective division office until it is notified of the student's transfer. *It is the student's responsibility to make such notification.* If notification was not made prior to the student's transfer, he should immediately write to the appropriate division and request that his records be forwarded to the Office of the Registrar, University of Maryland, College Park.

**TRANSCRIPTS:** Students may secure official transcripts of their scholastic records upon request to the Office of the Registrar, University of Maryland, College Park. Students formerly enrolled in the European, Far East, or Baltimore Divisions, but who have not yet requested the return of their records (see preceding paragraph), should write directly to the appropriate division for their transcripts, sending a copy of the letter to the Office of the Registrar at College Park. After one complimentary copy of the transcript, a fee of \$1.00 will be charged for each transcript issued. The fee must be paid in advance.

**TRANSFER OF UNIVERSITY OF MARYLAND CREDITS TO OTHER ACADEMIC INSTITUTIONS:** A student planning to transfer credit earned with the University of Maryland should seek guidance directly from the institution to which he plans to transfer. Only that institution can answer specific questions about its own residence and degree requirements or the applicability of Maryland courses to its curricula.

**ACADEMIC AND GENERAL REGULATIONS:** Academic and general regulations of the University of Maryland are applicable to the University College program. The adult part-time student is expected to achieve a quality of academic work comparable to that of the full-time campus student. The dean of University College or his authorized representative reserves the right to disenroll any student who does not maintain the required standards of scholarship of this College or whose conduct is unsatisfactory.

## THE GRADING SYSTEM

**MARKING SYSTEM:** The following grades are used by the University of Maryland: A-Superior Scholarship; B-Good Scholarship; C-Fair Scholarship; D-Passing Scholarship; F-Failure; I-Incomplete; W (with suffix)-Official Withdrawal; X-Ceased to attend class without an official withdrawal.

**THE GRADE OF "I":** The mark of "I" (Incomplete) is exceptional. A student may be given the mark of Incomplete if his work in a course has been qualitatively satisfactory and if he can present valid reasons to support his

## GRADING SYSTEM, SCHOLASTIC ACHIEVEMENT

request. In no case will the mark of "I" be recorded for a student who has missed more than one fourth of the meetings of the class.

The student *must* consult his instructor, presenting documentation to substantiate his request for an Incomplete. The instructor will make the final decision concerning the granting of the request.

An Incomplete automatically becomes an "F" if it is not removed by the end of the next semester or term in which that subject is again offered (at the same center). A student should realize that it is virtually impossible to remove an Incomplete subsequent to his transfer. An "I" cannot be removed by the grades "W" or "X". All "I's" revert to "F's" at time of graduation.

**THE GRADE OF "W":** A student officially withdrawing from all courses during the first half of a semester or term shall be given a grade of "WX." After that time he will receive a grade of "WP" in each course in which his work was passing and a grade of "WF" in any course where he was not passing.

**THE GRADE OF "X":** A mark of "X" will be used in those cases where a student has ceased to attend a class without an official withdrawal provided the student is doing passing work. If he is doing failing work, the grade of "F" will be given. A mark of "X" indicates no record, no prejudice, is terminal, and may not later be changed as in the case of the incomplete mark of "I".

**CHANGE OF GRADE:** With the exception of the grade of "I", all grades are final and *cannot* be changed. If a student wishes to establish credit in a course in which he has previously received an "F" or "X", he must re-register, pay the full tuition fee, and repeat the entire course. A student may repeat a course only once, except where he has obtained the written permission of the dean and the head of the department in which he took the course and has had such written permission filed in the Registrar's Office.

**COMPUTATION OF SCHOLASTIC AVERAGES:** In computing scholastic averages, numerical values are assigned to the marks, per semester credit, as follows: A-4, B-3, C-2, D-1, F-0. The grade of "F" is included in any computation of scholastic averages, but the grades of "X" and "I" are not. However, at the time of graduation all incompletes automatically revert to "F"

## RECOGNITION FOR SCHOLASTIC ACHIEVEMENT

A student who has completed a unit of at least 15 consecutive semester hours of Maryland course work with a 3.5 average is eligible for the Dean's List, which is prepared at the end of each semester or term. If the student fails to make the required average after completing a unit of work, he must complete another 15-hour unit to be considered for the Dean's List again. A course included in the computation of the average for one unit of work cannot be used in the computation of the average for a second unit.

Members of the graduating class are eligible for consideration for honors if they have completed a minimum of 60 semester hours of Maryland courses.



## SCHOLASTIC ACHIEVEMENT

Those who rank in the top ten per cent of the graduating class of their college are graduated with High Honors; those in the second ten per cent are graduated with Honors. The names of all honor students are listed in the program of the June Commencement Exercises at College Park.





# CENTERS

University College conducts educational programs at the College Park and Baltimore campuses, in various locations in the State, in industrial establishments, and in Army, Naval, Air Force and other governmental installations in Maryland, the District of Columbia, and overseas.

Stateside, classes are offered at centers ranging from Oakland, approximately 160 miles west of College Park, to Worcester County, which borders on the Atlantic Ocean. Centers also range from counties bordering on Pennsylvania to Patuxent in Southern Maryland.

## BALTIMORE DIVISION,

Lombard and Greene Streets, Baltimore 1, Maryland

EDWARD F. COOPER, M.A., *Director*

CHARLES N. SOMERS, M.A., *Assistant Director*

FRANCES C. WICKHAM, M.A., *Nursing Advisor*

Offices for the Baltimore Division of University College are maintained in the Administration Building on the Baltimore Campus at Lombard and Greene Streets. The Baltimore division conducts an extensive evening program in Baltimore, and also administers programs in approximately fifteen other centers in the northeastern portion of the State.

During the academic year 1962-63, over six thousand students from Baltimore city and surrounding counties were enrolled in some 350 different courses. Students are currently working on degrees in several undergraduate colleges and in the Graduate School of the University.

**SCOPE OF OFFERINGS:** The Baltimore Division offers courses in the various natural and physical sciences, business administration, economics, education, government and politics, geography, history, industrial education, languages, philosophy, psychology, sociology, speech and English that may be applied toward meeting the requirements of the BA in General Studies, and other undergraduate and graduate degree programs.

A printed schedule of courses for Baltimore and nearby centers is issued each semester. Copies of this schedule may be secured by writing the office of the director or by calling Plaza 2-1100, Extension 292. In addition to Baltimore City, off-campus centers in Baltimore, Howard, Harford, Carroll, Cecil and Anne Arundel counties are administered by the Baltimore Division.

**EDUCATION:** The College of Education supports a steadily expanding offering for teachers and school officials in Baltimore City and in surrounding counties. Courses are offered which teachers may apply toward bachelor's degrees and graduate degrees in education and/or to meet certification requirements.

Those teachers planning to enroll in courses for the purpose of meeting certification requirements are advised to consult with the State Department of Education and/or their local school supervisor.

## BALTIMORE, EVENING DIVISIONS

Students pursuing degree programs are advised to consult with their faculty advisor.

The staff of the Institute for Child Study, College of Education, offers each year a series of courses on Human Development, and on the techniques of child study for members of the educational profession. A sequence of three courses called Child Development Laboratory I, II, and III, which involves the direct year-long study of children as individuals and in groups, is offered to teachers in the field. Teachers should consult their boards of education for offerings in their community. Graduate courses in human development are also available through cooperation of the Institute.

**NURSING:** The School of Nursing, through University College, offers a program for registered nurses leading toward a Bachelor of Science degree in Nursing. For further information, nurses should refer to pages 26-28 of this catalog, on the School of Nursing, and consult the Baltimore Office of University College, University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland.

**HOME ECONOMICS:** Courses conducted in the Baltimore Division by the College of Home Economics, through University College, are selected from the total offerings which constitute the curricula in educational-community, family life, and related art areas of home economics. Subject-content courses in the several areas required for home economics teacher certification will be offered on a rotating basis. Students pursuing degree programs are advised to consult with Home Economics faculty advisors relative to curriculum offerings.

**INDUSTRIAL EDUCATION:** Courses conducted in the Baltimore Center by the Industrial Education Department are selected from the total offerings which constitute the three curricula administered by the Department; namely, the Industrial Arts curriculum, the Education for Industry curriculum and the Vocational-Industrial teacher certification curriculum. Courses required for Vocational-Industrial teacher certification are arranged in a two-year cycle so that these persons may obtain the necessary course work within two years.

## EVENING DIVISION, College Park, Maryland

JAMES R. QUIMPER, M.A., *Director*

Starting with the spring semester of 1959, the Board of Regents authorized the establishment of an on-campus evening program of college credit courses for adults to be offered through University College. Fifteen courses were offered during the spring semester, primarily lower-division courses. The following fall the University appointed a full-time Coordinator with offices in Room 200 of the Skinner Building on the College Park campus. During the academic year 1962-63, over two thousand students from the surrounding area were enrolled in some 120 different courses. The majority are pursuing a program leading to the Bachelor of Arts degree in General Studies offered through Uni-

## EVENING DIVISION, OFF CAMPUS CENTERS

versity College, or the Bachelor of Science degree in Education offered through the College of Education. Many are also taking courses for self-improvement.

**ADMISSIONS:** Students are referred to pages 11-12 of this catalog for a general description of the requirements for admission to the College Park Evening Division.

**SCOPE OF OFFERINGS:** The plan of the Evening Division each semester is to offer courses in the various fields applicable to the Bachelor of Arts degree in General Studies. Many of these courses may be applied toward meeting the requirements of the various undergraduate and graduate degree programs of the University.

A printed schedule of courses offered in the Evening Division is published each semester. Copies may be secured by writing the Director or by calling WARfield 7-3800, Extension 7111.

**EDUCATION:** The College of Education offers a program on the College Park campus for teachers and school officials from the surrounding area.

Courses are offered which may apply toward bachelor's degrees and graduate degrees in education and/or to meet certification requirements. Students matriculated in a graduate or undergraduate degree program may enroll concurrently in academic courses offered through the Evening Division. The student should ascertain beforehand whether a specific course is applicable to his or her program. *Separate registration forms are required in cases of concurrent registrations.*

Those teachers planning to enroll in courses for the purpose of meeting certification requirements are advised to consult with the State Department of Education and/or their local school supervisor. It is not necessary for such special students who have previously been enrolled to be re-admitted to the University prior to registration.

**HOME ECONOMICS:** Courses conducted in the Evening Division by the College of Home Economics, through University College, are selected from the total offerings which constitute the curricula in educational-community, family life, and related art areas of home economics. Subject-content courses in the several areas required for home economics teacher certification will be offered on a rotating basis. Students pursuing degree programs are advised to consult with Home Economics faculty advisors relative to curriculum offerings.

## OFF CAMPUS STATESIDE CENTERS

The College is prepared to establish credit courses, institutes, and special programs for groups of adults who are qualified to do university work. If facilities permit and demand is sufficient, courses or institutes may be established in any community requesting this service.

The ability of University College to meet all requests for off-campus courses is limited by three factors: (1) The College prefers to use regular University

## OFF CAMPUS CENTERS

staff members to teach its courses. Occasionally, staff members are not free for off-campus assignments. (2) Courses can be given only where there are adequate reference library materials, laboratories or other necessary facilities. (3) Another limiting factor is student enrollment. Occasionally, a course which has been scheduled must be cancelled if there is insufficient enrollment.

During the 1962-63 school year, programs were offered at the stateside centers listed below:

- \*Aberdeen Proving Ground
- Andrews Air Force Base
- \*Baltimore
- Bolling Air Force Base
- Campus (College Park)
- \*Edgewood Arsenal
- Fort Meade
- Fort Ritchie

- \*Maryland Penitentiary
- National Bureau of Standards
- National Security Agency
- Naval Ordnance Laboratory
- Naval Research Laboratory
- Patuxent River Naval Air Station
- Pentagon
- Walter Reed Army Medical Center
- \*Westinghouse Electronics Plant

A schedule of courses for each of the centers described is available approximately six weeks prior to the beginning of each semester.

In cooperation with County Superintendents, University College and the College of Education have developed three-year cycles of course offerings in certain areas of the State. Such long range scheduling permits everyone concerned to plan programs more intelligently. At the invitation of County Superintendents, similar cycles will be developed in other areas of the State.

Courses have been offered in the counties indicated below:

- Allegany
- \*Anne Arundel
- \*Baltimore
- Calvert
- Caroline
- Charles
- Dorchester
- Frederick
- Garrett
- \*Harford

- Kent
- Montgomery
- Prince George's
- Queen Anne's
- Somerset
- St. Mary's
- Talbot
- Washington
- Wicomico
- Worcester

Teachers interested in having a program in education initiated in their community should make their requests known to this College through their county superintendents of schools.

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\* Courses in these centers and counties are administered through the Baltimore Division, Lombard and Greene Streets, Baltimore 1, Maryland.



## ABERDEEN PROVING GROUND, Aberdeen, Maryland

Courses at the Aberdeen Proving Ground are planned to meet the educational needs of military and civilian personnel in the Aberdeen area. Courses are offered in a planned sequence to allow students to pursue the General Studies degree. During the past two years, courses were offered in such fields as business administration, economics, education, English, foreign languages, history, government and politics, mathematics, military studies, nursing, nutrition, psychology, and speech. The Army Education Center at the Proving Ground assists the University in planning this program. The cycle of courses offered at the Proving Ground complements those offered at Edgewood Arsenal.

Civilians may enroll for on-post courses by securing special passes at the gate. Further information concerning this program may be secured by calling Mr. John Lichi, Education Officer, at CRestview 2-4000, extension 43118, Aberdeen Proving Ground, or the Baltimore Office of University College, PLaza 2-1100, extension 292.

## ANDREWS AIR FORCE BASE, Washington 25, D. C.

During the 1951 spring semester an educational program was initiated at Andrews Air Force Base. The Education Office at Andrews, with the cooperation of this College, plans the program for Andrews several months in advance of each semester.

During the past two years, offerings have included courses in business administration, economics, education, English, foreign languages, geography, government and politics, history, mathematics, military studies, philosophy, psychology, sociology, and speech. Officers and airmen enroll in the various courses leading to the General Studies degree. Civilians may enroll in Andrews courses on a space available basis.

The Andrews educational program complements that of Bolling Air Force Base. Personnel may enroll at either installation, or they may enroll concurrently at both.

Further information may be obtained from Mr. Benjamin Elkin, Base Education Officer, 981-5425, or this college, WARfield 7-3800, extension 7111.

## BOLLING AIR FORCE BASE, Washington 25, D. C.

Since 1948, an education program has been offered at Bolling Air Force Base each semester and summer term. The Education Office at Bolling, with the cooperation of this College, plans each program several months in advance.

The past two years' offerings included courses in business administration, economics, education, English, foreign languages, geography, government and politics, history, mathematics, military studies, philosophy, psychology, sociology, and speech. Officers and airmen enroll in the various courses to pursue the General Studies degree. Civilians may enroll on a space available basis.

## OFF CAMPUS CENTERS

The Bolling education program complements that of Andrews Air Force Base. Personnel may enroll at either installation or they may enroll concurrently at both. Further information may be obtained from Mrs. Lois K. Roberts, Education Director, JOhnson 2-9000, extension 679 and 348, or this College, WARfield 7-3800, extension 7111.

## EDGEWOOD ARSENAL, Edgewood, Maryland

**CIVILIAN PROGRAM:** Courses are offered at the Edgewood Arsenal during duty hours for civilian personnel employed by the Arsenal as part of the Army Career Development and Training Program. Courses are offered on both the undergraduate and graduate levels, and are intended to increase the technical competency of participating personnel. The program is planned and scheduled with the cooperation of the Civilian Personnel Section of the Edgewood Arsenal.

During the past two years, courses were offered in business administration, chemistry, mathematics, foreign languages, physics, and pharmacology.

For further information concerning the program, call Mr. Henry Newman, Edgewood 1000, extension 26220, or the Baltimore Office of University College, Plaza 2-1100, extension 292.

**MILITARY PROGRAM:** A planned sequence of courses leading toward the General Studies degree is offered at the Edgewood Arsenal for military personnel of the area. The program is planned in cooperation with the Army Education Office, and it complements the course offerings at the Aberdeen Proving Ground.

During the past two years, courses were offered in business administration, economics, foreign languages, government and politics, history, mathematics, military studies, and speech.

Further information concerning the program may be secured by calling Lt. Emmett Curry, Army Education Officer, EDgewood 1000, extension 21153, or the Baltimore Office of University College, PLaza 2-1100, extension 292.

## FORT GEORGE G. MEADE, HEADQUARTERS—

### SECOND ARMY, Fort George G. Meade, Maryland

Courses offered at Fort Meade are designed to meet the educational needs of military and civilian personnel in the area. A regular sequence of courses is arranged for each semester to permit Army personnel to pursue the General Studies degree.

During the past two years courses were offered at Fort Meade in business administration, economics, education, English, geography, foreign languages, government and politics, history, mathematics, military studies, philosophy, psychology, sociology, and speech.

Further information may be obtained from Mr. Gustaf E. Berglund, Chief, Education Development, Army Education Center, 677-6421, or this College, WARfield 7-3800, extension 7111.

### NATIONAL BUREAU OF STANDARDS,

Connecticut Avenue at Upton Street, N.W., Washington 25, D.C.

Courses at the National Bureau of Standards are offered under the direction of the Bureau's Education Committee and this College. The program includes graduate and undergraduate courses. During the past two years the educational program at the National Bureau of Standards included courses in mathematics and physics. An announcement of courses for each year is available which explains the NBS program.

Further information concerning this program may be obtained from Mrs. Virginia Maxwell, NBS Registrar, EMerson 2-4040, extension 366, The Manse, or this College, WARfield 7-3800, extension 7111.

### NAVAL ORDNANCE LABORATORY, White Oak, Silver Spring, Maryland

The center at the Naval Ordnance Laboratory serves Navy Department personnel in the Washington area. For the most part, courses at this center are of graduate level.

In addition to its regular program, special courses are offered from time to time in support of new projects. A number of courses are arranged at the College Park campus evenings and Saturdays to amplify the NOL program.

During the past two years, advanced courses were offered in aeronautical engineering, business administration, chemistry, mathematics, and physics. A printed brochure is available which explains the NOL program.

Additional information may be obtained from Mr. D. E. Starnes, Training Division, 495-7411, NOL, or this College, WARfield 7-3800, extension 7111.

### NAVAL RESEARCH LABORATORY, Washington 25, D.C.

Courses under this program are designed primarily for Navy scientists doing graduate study in the fields of chemistry, engineering, mathematics, and physics and are given in cooperation with the Science Education Section of the Naval Research Laboratory. A printed brochure is available at the Naval Research Laboratory which explains the program.

During the past two years the Naval Research Laboratory program included advanced courses in mathematics and physics.

Further information concerning this program may be obtained from Mr. William J. McLaughlin, Training Officer, Personnel Division, or Mr. Eugene



## OFF CAMPUS CENTERS

C. Reinhardt, Jr., Head, Science Education Program, 574-1856 or this College, WARfield 7-3800, extension 7111.

## PATUXENT NAVAL AIR STATION, Patuxent, Maryland

In cooperation with this College the Patuxent Naval Air Test Center has offered a graduate program for its scientific and technical personnel since 1947. More recently, the program has expanded to include "The Patuxent Plan," a three-year, work-study program constituting two years of basic education in engineering science, mathematics or physics, and a management program for installation administrative and supervision personnel. General self-development opportunities are also provided, and these are open to local civilians.

During the past two years courses have been offered in business administration, chemistry, economics, English, engineering science, history, mathematics, physics, sociology, and speech.

Further information concerning this program may be obtained from Mr. John J. Lancaster, Jr., Training Director, VOLunteer 3-3111, extension 657, Patuxent, or this College, WARfield 7-3800, extension 7111.

## THE PENTAGON, Washington 25, D.C.

Established in 1947, the Pentagon program is sponsored by the Military District of Washington's Pentagon Education Center and is operated in cooperation with the Army, Air Force, Navy, and Marine Corps. Only military and civilian Department of Defense personnel in the Washington area are permitted to participate in this program. The respective Services periodically conduct polls to determine the educational needs of military personnel.

The educational offerings at the Pentagon represent the world's largest off-campus university program for military personnel. During the past two years courses were offered in business administration, economics, education, English, foreign languages, geography, government and politics, history, journalism, mathematics, military studies, philosophy, psychology, sociology, and speech. The majority of the students at the Pentagon are primarily interested in courses leading to the Bachelor of Arts degree in General Studies and degrees in various colleges. In addition, a number of students are pursuing graduate degrees.

Further information concerning this program may be obtained during the day from Mr. Stuart R. Westerlund or Mr. Charles A. Negri at the Pentagon, Room 3C147, Pentagon Education Center, OXford 7-8015 or OXford 7-2823. Air Force personnel may obtain information from Mrs. Lois Roberts, Pentagon, Room 5D476, OXford 7-7074 or OXford 7-1863; or this College, WARfield 7-3800, extension 7111.



## FORT RITCHIE, Cascade, Maryland

Courses offered at Fort Ritchie are designed to meet the educational needs of military and civilian personnel located at this post. During the past two years courses were offered in English, government and politics, history, mathematics, philosophy, psychology and speech.

Further information concerning this program may be obtained by consulting Mr. Stanley Kupp, Education Officer, Fort Ritchie, telephone 241-3141, extension 46244, or this College, WARfield 7-3800, extension 7111.

## WALTER REED ARMY MEDICAL CENTER, Washington 12, D.C.

Courses are given at the Army Medical Center in cooperation with the Education Office at the post. Course offerings are planned to meet the needs of military personnel and civilians interested in working for the General Studies degree and nurses interested in meeting requirements for a professional degree. Courses in English, foreign languages, government and politics, history, mathematics, military studies, psychology, and speech have been offered during the past two years.

Further information regarding the Walter Reed program may be obtained from Mr. Robert E. Hynes, Education Adviser, 576-2055, or this College, WARfield 7-3800, extension 7111.



## EUROPEAN DIVISION, Heidelberg, Germany

MASON G. DALY, PH.D., *Director*

DON E. TOTTEN, PH.D., *Assistant Director*

PHILIP D. WHEATON, PH.D., *Assistant Director*

JAMES L. COLWELL, PH.D., *Assistant Director*

JOHN F. PARR, PH.D., *Resident Dean*, Munich Campus

JOHN A. HUNT, PH.D. CAND., *Assistant Director*, United Kingdom

ANN R. REED, B.A., *Assistant Director of Admissions*

JOHANNA M. DARROW, B.A., *Evaluator, Admissions*

\_\_\_\_\_, *Assistant Registrar*

K. WILLIAM LEFFLAND, D.P.A., *Comptroller*

VIDA J. BANDIS, B.S., *Faculty Logistics*

JACK C. BARNES, PH.D., *English Supervisor*

\_\_\_\_\_, *Foreign Language Supervisor*

FRANZ THEO RUNKEL, *Staatsex.*, *Assistant Foreign Language Supervisor*

ROSE BEYER, *Dr. rer. nat.*, *Mathematics Supervisor*

A. M. PARSONS, B.S., COL., USA (RET.) *Military Studies Supervisor*

JAN HARTMAN, M.A., *Manager, Book Department*

D. M. BERSSENBRUGGE, M.A., *Librarian*

**HISTORY:** The success of on-base college credit programs at the Pentagon and military installations in the State of Maryland in the years immediately following World War II, prompted military officials to propose the establishment of a similar program in Europe in 1949. After University Officials confirmed the existence of the need and determined the feasibility of such a program, the first classes were opened in October 1949.

Over 1850 students registered for that first term at six Armed Forces Education Centers in Germany: Berlin, Frankfurt, Heidelberg, Munich, Nurnberg, and Wiesbaden. Today, more than 30,000 course enrollments are registered each year in the European Division which has expanded to include over 150 centers in 13 countries of Western Europe, The United Kingdom, North Africa, and the Near East.

The European Division maintains a central office in Heidelberg with its own admissions, registrar and comptroller sections. A branch office in London serves students in the United Kingdom; and the Munich Campus Daytime Program serves freshman and sophomore dependents of military and civilian personnel stationed in Europe.

The European Program is operated on an accelerated basis, with classes meeting two evenings each week for eight weeks. There are five terms a year. The terms run generally as follows:

September-November

November-January

February-March

April-May

June-July

**COURSES OFFERED:** The courses of study arranged for the European Program lead primarily to the Bachelor of Arts degree in General Studies. Courses are offered in business administration, economics, education, English, government and politics, history, foreign languages, mathematics, military studies, philosophy, psychology, sociology, and speech.

**TEACHING PERSONNEL:** A faculty of 400 to 500 full-time and part-time teachers is maintained during each academic term. All full-time lecturers are selected at College Park in consultation with the respective department heads. Some department heads appoint overseas staff members to act as their departmental representatives on matters pertaining to departmental policy. A close liaison is maintained between the department head, his overseas representative, and the Director's Office in Heidelberg.

Foreign language and mathematics courses are usually taught by qualified nationals who have been approved by the respective department heads or their representatives.

**COOPERATION OF EDUCATION BRANCHES:** The European Program would not be possible except for the valuable assistance and support of the Education Branches of the Armed Services. Full-time Maryland staff members are provided military transportation to and from Europe. Extensive assistance is given to the University in matters involving registration, quarters, and many other matters essential to the operation of the University's program overseas.

**LIMITS ON PARTICIPATION:** American civilians entitled to logistical support are admitted to University of Maryland classes, provided that no Armed Services personnel are excluded thereby.

**DEGREE OPPORTUNITIES:** Credit earned in the European Division is considered as residence credit at the University of Maryland. Students may pursue studies leading to degrees at the University of Maryland or may transfer the credits to other institutions subject to their regulations.

**THE MUNICH CAMPUS PROGRAM:** The European Division makes available at Munich a full-time program of freshman and sophomore level courses designed to meet the needs of Service dependents who are qualified for college work. The courses are of American college standard and are generally those required in the curricula of the College of Arts and Sciences. Regular daytime classes are scheduled throughout an academic year which consists of two semesters. Admission requirements are identical with those of the College Park campus.

Dormitory facilities are available for authorized dependents. Board, room, tuition, and student activities fees amount to approximately \$440 per semester; and books involve a cost of approximately \$50 per year.

**EUROPEAN DIVISION AND MUNICH CAMPUS CATALOGS:** Separate catalogs for the European Division and for the Munich Campus are published by the Heidelberg Office. A copy of either catalog may be obtained from University College, College Park, or by addressing a request to: University of Maryland, APO 403, New York, New York.

## EUROPEAN DIVISION

**EUROPEAN DIVISION CENTERS:** The number of education centers sponsoring classes varies from term to term as influenced by military policy and other factors that result from the movement of military personnel. Classes are being offered during the current academic year at the following centers in Europe, North Africa, and the Near East:

ETHIOPIA	Baumholder	Spangdahlem	Inoges
Asmara, Eritrea	Bayreuth	Stuttgart	Madrid
	Berlin	Ulm	Madrid-Torrejon
FRANCE	Bitburg	Vaihingen	Moron
Braconne	Bremerhaven	Wackernheim	Rosas
Bussac	Darmstadt	Wertheim	Sevilla
Camp des Loges	Erlangen	Wiesbaden	Soller, Majorca
Captieux	Frankfurt	Worms	Villatobas
Chambley	Friedberg	Würzburg	Zaragoza
Châteauroux	Fulda	Zweibrücken	
Chinon	Fürth		TURKEY
Croix Chapeau	Gelnhausen	GREECE	Adana
Etain	Giessen	Athens	Ankara
Evreux	Göppingen	Iraklion, Crete	Cigli
Fontainebleau	Hahn		Diyarbakir
Fontenet	Hanau	ITALY	Istanbul
Jeanne d'Arc	Heidelberg	Aviano	Izmir
Laon	Heilbronn	Brindisi	Karamursel
La Rochelle	Herzo Base	Leghorn	Samsun
Maison Fort	Idar-Oberstein	Naples	
Metz	Kaiserslautern	Sigonella, Sicily	UNITED KINGDOM
Nancy	Karlsruhe	Taranto	Alconbury
Orléans	Kirch-Göns	Verona	Bentwaters
Paris	Kitzingen	Vicenza	Bovingdon
Poitiers	Kornwestheim		Brize Norton
Saumur	Ludwigsburg	LIBYA	Bruntingthorpe
SHAPE	Mainz	Tripoli	Bushy Park
St. Nazaire	Mannheim		Chicksands
Toul (Army Depot)	Möhringen	MOROCCO	Croughton
Toul-Rosières	Munich	Ben Guerir	Denham
Trois-Fontaines	Neckarsulm	Nouasseur	Fairford
Verdun	Nellingen	Sidi Slimane	Greenham
Vitry-le-François	Neubrück		Common
	Nürnberg	NETHERLANDS	Grosvenor
	Oberamergau	Soesterberg	Square
GERMANY	Pirmasens		Harrogate
Ansbach	Prüm	NORWAY	High Wycombe
Aschaffenburg	Ramstein	Oslo	Kirknewton
Augsburg	Rhein-Main	PAKISTAN	Lakenheath
Babenhausen	Rothwesten	Peshawar	Mildenhall
Bad Aibling	Schwäbisch		Prestwick
Bad Kissingen	Gmünd	SPAIN	South Ruislip
Bad Kreuznach	Schwäbisch Hall	Benidorm	Upper Heyford
Bad Tölz	Schweinfurt	Constantina	Wattisham
Bamberg	Sembach	Elizondo	Wethersfield



# ATLANTIC DIVISION, College Park, Maryland

\_\_\_\_\_, *Director*

**HISTORY:** The Atlantic Division comprises the centers in Newfoundland, Greenland, Iceland, Bermuda, and the Azores. The University of Maryland inaugurated the Newfoundland and Iceland programs in 1951, the Greenland program in 1953, the Bermuda program in 1957, and the Azores program in 1959.

The number of students and course enrollments per term averages 750 and 800 respectively.

The division is administered by a director located at University College, University of Maryland, College Park, Maryland.

The Atlantic Division Program is operated on an accelerated basis, 3-hour classes normally meeting two evenings each week for eight weeks which comprise one term. All classes meet for a minimum of forty-eight classroom hours regardless of the length of the course. Classes in mathematics meet for sixteen weeks. Variations in course length appear in the Term Schedule which is published at the beginning of each of five terms which constitute the academic year. Allowing for the yearly calendar variations the following 1963-64 term dates may be used as a guide to determine term dates for any year. All new terms begin on a Monday:

**TERM I** August 19, 1963 to October 11, 1963

**TERM II** October 21, 1963 to December 13, 1963

**TERM III** January 13, 1964 to March 6, 1964

**TERM IV** March 16, 1964 to May 8, 1964

**TERM V** May 18, 1964 to July 10, 1964

**COURSES OFFERED:** Courses in business administration, speech, economics, English, foreign languages, government and politics, history, philosophy, military studies, psychology, and mathematics were offered during the past two years.

As in the European and Far East Division, students may complete all degree requirements in residence at the various Atlantic Division Centers. In past years, degrees have been awarded at every base in the Atlantic Division, except Sondrestrom. The Bachelor of Arts in General Studies is offered. All credits are residence credits at the University of Maryland and may be transferred to other universities subject to their regulations.

**COOPERATION OF EDUCATION BRANCHES:** This program would not be possible without the valuable assistance and support of the educational personnel at the respective centers. In addition to transportation to and from the bases of assignment, extensive logistic and administrative assistance is given to full-time University resident lecturers. Education center personnel arrange for classrooms, provide instructional supplies, and participate in the registration of students.

## ATLANTIC

**NEWFOUNDLAND:** At the request of the North East Air Command, USAF, and the U. S. Navy, the University of Maryland inaugurated the Newfoundland program on July 1, 1951. Currently, courses are offered at the following centers:

Goose Bay Air Base, (Labrador) APO 677, New York, N. Y.

Harmon Air Force Base, Stephenville, APO 864, New York, N. Y.

Naval Air Station, Argentia, FPO 103, New York, N. Y.

Further information regarding the Goose Bay and Harmon centers may be obtained from the Chief, Education Section, Headquarters, Eighth Air Force, Westover Air Force Base, Massachusetts, or the Director, Atlantic Division, College Park. Information regarding the center at Argentia may be obtained from the Chief, Naval Personnel, Bureau of Naval Personnel, Department of Navy, Washington 25, D. C., or from the Director, Atlantic Division, College Park.

**ICELAND:** At the request of the Military Air Transport Service a center was established at Keflavik, Iceland, in December, 1951. Further information regarding the Iceland center may be obtained from the Education Officer, U. S. Naval Station, FPO 568, New York, N. Y., or the Chief, Naval Personnel, Bureau of Naval Personnel, Department of Navy, Washington 25, D. C., or the Director, Atlantic Division, College Park.

**GREENLAND:** At the request of the North East Air Command, the University of Maryland inaugurated the Greenland program in February, 1953. Currently, courses are offered at the following centers:

Thule Air Base, APO 23, New York, N. Y.

Sondrestrom Air Base (BW-8), APO 121, New York, N. Y.

Further information regarding the Greenland centers may be obtained from the Director of Personnel Services, Headquarters, 64th Air Division (Defense), Stewart Air Force Base, Newburgh, New York, or the Director, Atlantic Division, College Park.

**BERMUDA:** At the request of the Military Air Transport Service a center was established at Kindley Air Force Base in September, 1957. This center also provides courses for the Naval Operating Base, Bermuda, FPO 138, New York, N. Y. Further information regarding this center may be obtained from the Education Services Officer, 1604th Air Base Wing, APO 856, New York, N. Y., or the Personnel Services Officer, Headquarters, Eastern Air Force, McGuire Air Force Base, Wrightstown, New Jersey, or from the Director, Atlantic Division, College Park.

**AZORES:** At the request of the Military Air Transport Service a center was established at Lajes Air Transport Station, Terceira, Azores in August, 1959. Further information regarding this center may be obtained from the Education Services Officer, 1605th Air Base Squadron, APO 406, New York, N. Y., or from the Personnel Services Officer, Eastern Air Force, McGuire Air Force Base, Wrightstown, New Jersey, or from the Director, Atlantic Division, College Park.

## FAR EAST DIVISION, Tokyo, Japan

LESLIE R. BUNDGAARD, PH.D., *Director*

JOSEPH E. DELLEN, PH.D., *Associate Director*

WALTER V. HOHENSTEIN, PH.D., *Assistant Director*

DAVID M. EARL, PH.D., *Assistant Director, Korea*

GENE H. BUNDGAARD, B.ED., *Assistant Director of Admissions & Registrations*

IVAN BENSON, PH.D., *English Supervisor*

JOHN YOUNG, PH.D., *Language Supervisor*

**HISTORY:** In August, 1956, the University of Maryland facilities were extended to Japan, Okinawa and Korea. Taiwan and Guam were added during the first year of operation, and a center in Saigon, Vietnam, was opened in 1963. This program was made possible by arrangements both with the military and with the University of California, which had conducted an educational program in the Far East since 1950. On its withdrawal, the University of California recommended to the Far East Command that the University of Maryland expand its Overseas Program by offering courses to American military and civilian personnel stationed in the Orient. When the Maryland classes opened in September of 1956, there were 1,820 course enrollments in 82 classes at 42 centers. Average enrollments currently top 5,000 per term.

The program in the Far East, like that in Europe and the Atlantic, is operated on a term basis, with classes meeting two evenings each week during an eight-week period. There are five terms each year.

The administrative offices for the Far East Division are located in Tokyo, Japan. The Tokyo office maintains a director, an associate director, an assistant director, a comptroller, an assistant director of admissions and registrations, an English supervisor and a language supervisor. In addition, an assistant director, with offices in Seoul, administers the Korean program.

**COURSES OFFERED:** The courses of study arranged for the University's program in the Far East are aimed primarily toward the attainment of the Bachelor of Arts degree in General Studies. Courses are taught in business administration, economics, education, English, foreign languages, government and politics, history, mathematics, military studies, philosophy, psychology, sociology, and speech.

**TEACHING PERSONNEL:** A faculty of between 225 and 250 full-time and part-time teachers is maintained during each academic term. All teachers are selected at College Park in consultation with the respective department heads. A close liaison is maintained between department heads and their respective departmental instructors.

**COOPERATION OF EDUCATION BRANCHES:** The Far East Division would not be possible except for the valuable assistance and support of the Armed Services Education Branches. Full-time staff members are provided military transportation to and from centers in the Pacific area. Extensive

## FAR EAST DIVISION

assistance is given to the University in matters involving registration, quarters, and other essentials of the University's services in centers of troop concentration in the Orient.

**DEGREE OPPORTUNITIES:** Credit earned in the Far East Division is considered as residence credit at the University of Maryland. Students may either pursue studies leading to degrees in the University of Maryland, or they may transfer credits earned to other institutions subject to their regulations.

**ADDRESS FOR FURTHER INFORMATION:** A separate Far East Division catalog is published by the Tokyo Office. Information concerning the Far East Division may be obtained by writing to: University of Maryland, Far East Division, APO 925, San Francisco, California; or University College, University of Maryland, College Park.

**FAR EAST DIVISION CENTERS:** Centers where Maryland courses are offered vary from term to term, as dictated by military policy and other factors necessitated by the movement of military personnel. Classes are concurrently being offered at the following centers in the Far East:

### GUAM

Andersen Air Force Base

### JAPAN

Atsugi Marines  
Camp Drake  
Fuchu AS  
Grant Heights  
Hakata AS  
Itazuke AB  
Iwakuni MAS  
Johnson AS  
Kishine Barracks  
Kuma Station  
Misawa AS  
Tachikawa AB  
Wakkanai AS  
Washington Heights  
Yokosuka Navy  
Yokota AB  
Camp Zama

### KOREA

Ascom AC  
Kimp'o AB  
Kunsan AB  
Osan AB  
Pusan AC  
Seoul AC  
Taegu AC

### I Corps

Camp Red Cloud  
Camp St. Barbara

### 1st Cavalry Division

Camp Howze  
4th Cav.  
5th Cav.  
8th Cav.  
12th Cav.  
23rd Transportation Bn.

### 7th Infantry Division

East Camp Casey  
West Camp Casey  
Camp Hovey  
Camp Kaiser  
Camp Humphreys  
Camp Page

### OKINAWA

Kadena AB  
Machinato  
Naha AB  
Sukiran  
Torii Station

### TAIWAN

Tainan  
Taipei

### VIETNAM

Saigon



# COURSE DESCRIPTIONS

Current courses which have been taught in the last three years through the University College are listed below. They are arranged in alphabetical order by academic department. The number of hours of credit is shown by the arabic numeral in parentheses after the title of the course.

Course numbers are designated as follows:

1 to 99—Courses for undergraduates

100 to 199—Courses for advanced undergraduates and graduates. (Not all 100-level courses may be taken for graduate credit.)

200 to 399—Courses for graduates only.

Courses listed in the catalogs of other colleges of the University may be offered by the University College if demand warrants and the academic department concerned approves.

## BOTANY

### BOT. 1. GENERAL BOTANY. (4)

Lecture and laboratory. General introduction to botany, touching briefly on all phases of the subject. Emphasis is on the fundamental biological principles of the higher plants. Laboratory fee, \$6.00.

### BOT. 2. GENERAL BOTANY. (4)

Prerequisite, Bot. 1 or equivalent. Laboratory fee, \$6.00. A brief evolutionary study of algae, fungi, liverworts, mosses, ferns and their relatives, and the seed plants, emphasizing their structure, reproduction, habitats, and economic importance.

## BUSINESS ADMINISTRATION

### B. A. 10. BUSINESS ENTERPRISE. (3)

A survey course covering the internal and functional organization of a business enterprise, its organization and control.

### B. A. 20, 21. PRINCIPLES OF ACCOUNTING. (3, 3)

Required in all business organization curriculums. Prerequisite, sophomore standing. The principles of accounting for business enterprise and the use of accounting data in making business decisions.

### *For Advanced Undergraduates*

### B. A. 100. OFFICE OPERATIONS AND MANAGEMENT. (3)

Prerequisite, junior standing. Deals with the principles of scientific management as they apply to the examination, improvement, installation, and operation of the most effective paperwork methods and systems that a given organization can use to achieve its objectives. Procedure flow analysis and form design for control of paperwork; process, work distribution, and layout charts, distribution of authority and responsibility for office activities are among the areas considered.

## BUSINESS ADMINISTRATION

### B. A. 110, 111. INTERMEDIATE ACCOUNTING. (3,3)

Prerequisite, B.A. 21. A comprehensive study of the theory and problems of valuation of assets, application of funds, corporation accounts and statements, and the interpretation of accounting statements.

### B. A. 130. BUSINESS STATISTICS. I. (3)

Prerequisite, junior standing. Laboratory fee, \$3.50. An introductory course. Emphasis is placed upon statistical inference. Topics covered include statistical observation, frequency distributions, averages, measures of variability, elementary probability, sampling, distributions, problems of estimation, simple tests of hypotheses, index numbers, time series, graphical and tabular presentation. Selected applications of the techniques are drawn from economics, industrial management, marketing and accounting.

### B. A. 140. BUSINESS FINANCE. (3)

Prerequisite, B.A. 20, 21. This course deals with the principles and practices involved in the organization, financing, and rehabilitation of business enterprises; the various types of securities and their use in raising funds, apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

### B. A. 149. MARKETING PRINCIPLES AND ORGANIZATION. (3)

Prerequisite, Econ. 32 or 37. This is an introductory course in the field of marketing. Its purpose is to give a general understanding and appreciation of the forces operating, institutions employed, and methods followed in marketing agricultural products, natural products, services, and manufactured goods.

### B. A. 150. MARKETING MANAGEMENT. (3)

Prerequisite, B. A. 149. A study of work of the marketing division in a going organization. The work of developing organizations and procedures for the control of marketing activities are surveyed. The emphasis throughout the course is placed on the determination of policies, methods, and practices for the effective marketing of various forms of manufactured products.

### B. A. 160. PERSONNEL MANAGEMENT I. (3)

This course deals with the problems of directing and supervising employees under modern industrial conditions. Two phases of personnel administration are stressed, the application of scientific management and the importance of human relations in this field.

### B. A. 161. PERSONNEL MANAGEMENT II. (3)

Prerequisite, B.A. 160. Job evaluation and merit rating and other personnel management techniques generally employed in business.

### B. A. 163. INDUSTRIAL RELATIONS. (3)

A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

### B. A. 164. LABOR LEGISLATION AND COURT DECISIONS. (3)

Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.

### B. A. 166. BUSINESS COMMUNICATIONS. (3)

Prerequisite, junior standing. A systematic study of the principles of effective

## BUSINESS ADMINISTRATION, CHEMISTRY

written communications in business. The fundamental aim is to develop the ability to write clear, correct, concise, and persuasive business letters and reports.

**B. A. 168. MANAGEMENT AND ORGANIZATION THEORY. (3)**

The historical development of management and organization theory, nature of the management process and function and its future development. The role of the manager as an organizer and director, the communication process, goals and responsibilities.

**B. A. 169. PRODUCTION MANAGEMENT. (3)**

Studies the operation of a manufacturing enterprise, concentrating on the economies of production. Introduces a grounding in analytical method early so that the broad problem areas of system design, operation, and control can be based upon the analytical method.

**B. A. 180, 181. BUSINESS LAW. (3,3)**

Legal aspects of business relationships, contracts, negotiable instruments, agency, partnerships, corporations, real and personal property, and sales.

## CHEMISTRY

**CHEM. 1, 3. GENERAL CHEMISTRY. (4,4)**

Prerequisite, 1 year high school algebra or equivalent. Laboratory fee, \$12.00.

**CHEM. 11, 13. GENERAL CHEMISTRY. (3,3)**

An abbreviated course in general chemistry for students in home economics and pre-nursing. This course is open only to students registered in home economics and pre-nursing. Laboratory fee, \$12.00.

**CHEM. 15. QUALITATIVE ANALYSIS. (4)**

Prerequisite, Chem. 3. Laboratory fee, \$12.00.

**CHEM. 19. ELEMENTS OF QUANTITATIVE ANALYSIS. (4)**

Prerequisite, Chem. 3. An introduction to the basic theory and techniques of volumetric and gravimetric analysis. Laboratory fee, \$12.00.

**CHEM. 21. QUANTITATIVE ANALYSIS. (4)**

Prerequisite, Chem. 15. An intensive study of the theory and techniques of inorganic quantitative analysis, covering primarily volumetric methods. Laboratory fee, \$12.00.

**CHEM. 35, 37. ELEMENTARY ORGANIC CHEMISTRY. (2,2)**

Prerequisite, Chem. 3. A course for chemists, chemical engineers, pre-medical students, and pre-dental students. Two lectures per week.

**CHEM. 36, 38. ELEMENTARY ORGANIC LABORATORY. (2,2)**

Prerequisites, Chem. 35, 37, or concurrent registration therein. Laboratory fee, \$12.00.

### *For Advanced Undergraduates and Graduates*

**CHEM. 101. ADVANCED INORGANIC CHEMISTRY. (3)**

Three lectures per week. Prerequisites, Chem. 37, 189.

**CHEM. 141, 143. ADVANCED ORGANIC CHEMISTRY. (2,2)**

Two lectures per week. Prerequisites, Chem. 37, 38. An advanced study of the compounds of carbon.

## CHEMISTRY, ECONOMICS

### CHEM. 144. ADVANCED ORGANIC LABORATORY. (2-4)

Two or four three-hour laboratory periods per week. Prerequisites, Chem. 37, 38. Laboratory fee, \$12.00.

### CHEM. 146, 148. THE IDENTIFICATION OF ORGANIC COMPOUNDS. (2,2)

Prerequisites, Chem. 141, 143, or concurrent registration therein. The systematic identification of organic compounds. Laboratory fee, \$12.00.

### CHEM. 161, 163. BIOCHEMISTRY. (2,2)

Two lectures per week. Prerequisite, Chem. 33 or 37. This course is designed primarily for students in agriculture, bacteriology, or chemistry, and for those students in home economics who need a more extensive course in biochemistry than Chem. 81.

### CHEM. 162, 164. BIOCHEMISTRY LABORATORY. (2,2)

Two three-hour laboratory periods per week. Prerequisite, Chem. 33, or Chem. 38. Laboratory fee, \$12.00. A laboratory course for students taking Chem. 161, 163.

### CHEM. 187, 189. PHYSICAL CHEMISTRY. (3,3)

Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21; or consent of instructor. A course primarily for chemists and chemical engineers. This course must be accompanied by Chem. 188, 190.

### CHEM. 188, 190. PHYSICAL CHEMISTRY LABORATORY. (2,2)

A laboratory course for students taking Chem. 187, 189. Laboratory fee, \$12.00.

## ECONOMICS

### ECON. 31, 32. PRINCIPLES OF ECONOMICS. (3,3)

Prerequisite, sophomore standing. Econ. 31 is a prerequisite for Econ. 32. Required in the Business Administration Curriculums. In Econ. 31 basic concepts, the monetary system, the national accounts, national income analysis, and business cycles are introduced. In Econ. 32 emphasis is placed on price theory, distribution, international trade, and economic development.

### *For Advanced Undergraduates and Graduates*

### ECON. 102. NATIONAL INCOME ANALYSIS. (3)

Prerequisite, Econ. 32. An analysis of national income accounts and the level of national income and employment.

### ECON. 131. COMPARATIVE ECONOMIC SYSTEMS. (3)

Prerequisite, Econ. 32 or 37. An investigation of the theory and practice of various types of economic systems. The course begins with an examination and evaluation of the capitalistic system and is followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism.

### ECON. 132. ADVANCED ECONOMIC PRINCIPLES. (3)

Prerequisite, Econ. 32. This course is an analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition.



### ECON. 138. ECONOMICS OF THE SOVIET UNION. (3)

Prerequisite, Econ. 32 or 37. An analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income.

### ECON. 140. MONEY AND BANKING. (3)

Prerequisite, Econ. 32 or 37. A study of the relation of money and credit to economic activity and prices; the impact of public policy in financial markets and in markets for goods and services; policies, structure, and functions of the Federal Reserve System; organization, operation, and functions of the commercial banking system, as related particularly to questions of economic stability and public policy.

### ECON. 142. PUBLIC FINANCE AND TAXATION. (3)

Prerequisite, Econ. 32 or 37. A study of government fiscal policy with special emphasis upon sources of public revenue, the tax system, government budgets, and the public debt.

### ECON. 148. INTERNATIONAL ECONOMICS. (3)

Prerequisite, Econ. 32 or 37. A descriptive and theoretical analysis of international trade; balance of payments accounts; the mechanism of international economic adjustment; comparative costs; economics of customs unions.

### ECON. 149. INTERNATIONAL ECONOMIC POLICIES. (3)

Prerequisite, Econ. 148. Contemporary balance of payments problems; the international liquidity controversy; investment trade and economic development; evaluation of arguments for protection.

### ECON. 160. LABOR ECONOMICS. (3)

Prerequisite, Econ. 32 or 37. The historical development and chief characteristics of the American labor movement are first surveyed. Present-day problems are then examined in detail: wage theories, unemployment, social security, labor organization, and collective bargaining.

### ECON. 170. INDUSTRIAL ORGANIZATION. (3)

Prerequisite, Econ. 32 or 37. Changing structure of the American economy; price policies in different industrial classifications of monopoly and competition in relation to problems of public policy.

## EDUCATION

### ED. 52. INTRODUCTION TO CHILDREN'S LITERATURE. (2-3)

Prerequisites, Eng. 1 and 2. A survey of literary materials for children and young people. Appropriate books for pre-school, elementary, and junior high school pupils are considered, including picture-story, fiction, folk-lore, poetry, and informational books. Integrating literature with the curriculum, and methods of using books with children in the classroom. Aids and criteria for selection.

## EDUCATION

### ED. 90. DEVELOPMENT AND LEARNING. (3)

A study of the principles of learning and their application to school situations. Designed to meet the usual teacher-certification requirement for educational psychology.

#### *For Advanced Undergraduates and Graduates*

### ED. 102. HISTORY OF EDUCATION IN THE UNITED STATES. (3)

A study of the origins and development of the chief features of the present system of education in the United States.

### ED. 105. SCIENCE IN THE ELEMENTARY SCHOOLS. (2-3)

Laboratory fee \$2.00. Designed to help teachers acquire general science understandings and to develop teaching materials for practical use in classrooms. Includes experiments, demonstrations, constructions, observations, field trips, and use of audio-visual materials. The emphasis is on content and method related to science units in common use in elementary schools. Formerly called Sci. Ed. 105.

### ED. 107. PHILOSOPHY OF EDUCATION. (2-3)

A study of the great educational philosophers and systems of thought affecting the development of modern education.

### ED. 121. THE LANGUAGE ARTS IN THE ELEMENTARY SCHOOL. (2-3)

Teaching of spelling, handwriting, oral and written expression, and creative expression. Special emphasis given to skills having real significance to pupils.

### ED. 122. THE SOCIAL STUDIES IN THE ELEMENTARY SCHOOL. (2-3)

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials, and utilization of environmental resources.

### ED. 123. THE CHILD AND THE CURRICULUM. (2-3)

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children.

### ED. 124. ARITHMETIC IN THE ELEMENTARY SCHOOL. (2-3)

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes.

### ED. 125. ART IN ELEMENTARY SCHOOLS. (2-3)

Concerned with art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools.

### ED. 127. TEACHING IN ELEMENTARY SCHOOLS. (2-6)

An overview of elementary school teaching designed for individuals without specific preparation for elementary school teaching or for individuals without recent teaching experience.

### ED. 130. THE JUNIOR HIGH SCHOOL. (2-3)

A general overview of the junior high school. Purposes, functions and characteristics of this school unit; a study of its population, organization, program of studies, methods, staff, and other topics, together with their implications for prospective teachers.

**ED. 133.\* METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOL. (2-3)**

Designed to give practical training in the everyday teaching situations. Use of various lesson techniques, audio and visual aids, reference materials, and testing programs and the adoption of teaching methods to individual and group differences. Present tendencies and aims of instruction in the social studies.

**ED. 134. MATERIALS AND PROCEDURES FOR SECONDARY SCHOOL CORE CURRICULUM. (3)**

This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. Laboratory fee, \$1.00.

**ED. 137.\* METHODS OF TEACHING MATHEMATICS IN SECONDARY SCHOOL. (3)**  
Considers the methods and procedures for presenting secondary mathematics in a meaningful way. Special attention will be given to the new experimental materials which have been prepared for grades 7-12 and the techniques needed to teach these courses.

**ED. 138.\* METHOD OF TEACHING SCIENCE IN SECONDARY SCHOOL. (3)**  
Considers such topics as the objectives, selection, organization, and presentation of subject matter, appropriate classroom methods and procedures, instructional materials and evaluation of learning experiences in the areas of science. Laboratory fee, \$2.00.

**ED. 141.\* METHODS OF TEACHING ENGLISH IN SECONDARY SCHOOLS. (3)**  
Content and method in teaching the English language arts.

**ED. 145. PRINCIPLES AND METHODS OF SECONDARY EDUCATION. (2-3)**  
This course is concerned with the principles and methods of teaching in junior and senior high schools. Instructional problems common to all of the subject fields are considered in relation to the needs and interests of youth, the urgent social problems of today, and the central values to which our society is committed.

**ED. 147. AUDIO-VISUAL EDUCATION. (3)**  
Laboratory fee, \$1.00. Sensory impressions in their relation to learning projection apparatus, its cost and operation; slides, film-strips, and films, physical principles underlying projection; auditory aids to instruction; field trips; pictures, models, and graphic materials; integration of sensory aids with organized instruction. Recommended for all education students.

**ED. 150. EDUCATIONAL MEASUREMENT. (3)**  
Constructing and interpreting measures of achievement.

**ED. 151. STATISTICAL METHODS OF EDUCATION. (3)**  
Designed as a first course in statistics for students in education. Emphasis is upon educational applications of descriptive statistics, including measures of central tendency, variability, and association.

**ED. 152. LITERATURE FOR CHILDREN AND YOUNG PEOPLE, ADV. (3)**  
Prerequisite, Ed. 52, or approval of instructor. Development of literary materials for children and young people. Timeless and ageless books, and outstanding

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\* This course is designed for teachers in service and is not open to regular undergraduate students.



## EDUCATION

examples of contemporary publishing. Evaluation of the contributions of individual authors and illustrators and children's book awards. Study and practice in story-telling, and reading guidance in the classroom and library.

### ED. 153. THE TEACHING OF READING. (2-3)

Concerned with the fundamentals of developmental reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs.

### ED. 154. REMEDIAL READING INSTRUCTION. (3)

Prerequisite, Ed. 153 or the equivalent. For supervisors and teachers who wish to help retarded readers. Concerned with causes of reading difficulties, the identification and diagnosis of retarded pupils, instructional materials, and teaching procedures.

### ED. 160. EDUCATIONAL SOCIOLOGY. (3)

This course deals with data of the social sciences which are germane to the work of teachers. Consideration is given to implications of democratic ideology for educational endeavor, educational tasks imposed by changes in population and technological trends, the welfare status of pupils, the socio-economic attitudes of individuals who control the schools, and other elements of community background which have significance in relation to schools.

### ED. 161. INTRODUCTION TO COUNSELING AND PUPIL SERVICES. (3)

Presents guidance principles and procedures, and examines the functions of counselors, psychologists in schools, school social workers, and other pupil service workers.

### ED. 189. WORKSHOPS, CLINICS, AND INSTITUTES. (1-6)

The maximum number of credits that may be earned under this course symbol toward any degree is six semester hours; the symbol may be used two or more times until six semester hours have been reached. The following type of educational enterprise may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors.

### *For Graduates (offered through University College only on Baltimore Campus)*

### ED. 203. PROBLEMS IN HIGHER EDUCATION. (3)

A study of present problems in higher education.

### ED. 210. THE ORGANIZATION AND ADMINISTRATION OF PUBLIC EDUCATION. (3)

The basic course in school administration. Deals with the organization and administration of school systems—at the local, state, and federal levels; and with the administrative relationships involved.



**ED. 211. THE ORGANIZATION, ADMINISTRATION, AND SUPERVISION OF SECONDARY SCHOOLS. (3)**

The work of the secondary school principal. Includes topics such as personnel problems, supervision, school-community relationships, student activities, schedule making, and internal financial accounting.

**ED. 212. SCHOOL FINANCE AND BUSINESS ADMINISTRATION. (3)**

An introduction to principles and practices in the administration of the public school finance activity. Sources of tax revenue, the budget, and the function of finance in the educational program are considered.

**ED. 214. SCHOOL PLANT PLANNING. (2)**

An orientation course in which the planning of school buildings is developed as educational designing with reference to problems of site, building facilities, and equipment.

**ED. 216. PUBLIC SCHOOL SUPERVISION. (3)**

The nature and functions of supervision; various supervisory techniques and procedures; human relationship factors; and personal qualities for supervision.

**ED. 217. ADMINISTRATION AND SUPERVISION IN ELEMENTARY SCHOOLS. (3)**

Problems in organizing and administering elementary schools and improving instruction.

**ED. 218. SCHOOL SURVEYS. (2-6)**

Prerequisite, consent of instructor. Includes study of school surveys with emphasis on problems of school organization and administration, finance and school plant planning. Field work in school surveys is required.

**ED. 219. SEMINAR IN EDUCATIONAL ADMINISTRATION AND SUPERVISION. (2-4)**

Prerequisite, at least four hours in educational administration and supervision or consent of instructor. A student may register for two hours and may take the seminar a second time for an additional two hours.

**ED. 223. PRACTICUM IN PERSONNEL RELATIONSHIPS. (2-6)**

Prerequisite, consent of instructor. Enrollment limited. Designed to help teachers, school administrators, and other school staff members to learn to function more effectively in developing educational policy in group situations. Each student in the course is required to be working concurrently in the field with a group of school staff members or citizens on actual school problems.

**ED. 225. SCHOOL PUBLIC RELATIONS. (3)**

A study of the interrelationships between the community and the school. Public opinion, propaganda, and the ways in which various specified agents and agencies within the school have a part in the school public relations program are explored.

**ED. 226. CHILD ACCOUNTING. (2)**

An inquiry into the record keeping activities of the school system, including an examination of the marking system.

**ED. 227. PUBLIC SCHOOL PERSONNEL ADMINISTRATION. (3)**

A comparison of practices with principles governing the satisfaction of school personnel needs, including a study of tenure, salary schedules, supervision, rewards, and other benefits.

## EDUCATION

- ED. 229. SEMINAR IN ELEMENTARY EDUCATION. (2)  
Primarily for individuals who wish to write seminar papers. Enrollment should be preceded by at least 12 hours of graduate work in Education.
- ED. 234. THE SCHOOL CURRICULUM. (2-3)  
A foundations course embracing the curriculum as a whole from early childhood through adolescence, including a review of historical developments, an analysis of conditions affecting curriculum change, an examination of issues in curriculum making, and a consideration of current trends in curriculum design.
- ED. 235. PRINCIPLES OF CURRICULUM DEVELOPMENT. (3)  
Curriculum planning, improvement, and evaluation in the schools; principles for the selection and organization of the content and learning experiences; ways of working in classroom and school on curriculum improvement.
- ED. 245. INTRODUCTION TO RESEARCH. (2)  
Intensive reading, analysis, and interpretation of research; applications to teaching fields; the writing of abstracts, research reports, and seminar papers.
- ED. 250. CASES IN PUPIL APPRAISAL. (3)  
Prerequisite, Ed. 262. Collecting and interpreting non-standardized pupil appraisal data; synthesis of all types of data through case study procedures.
- ED. 253. OCCUPATIONAL CHOICE THEORY AND INFORMATION. (3)  
Prerequisite, Ed. 161. Research and theory related to occupational and educational decisions; school programs of related information and other activities in occupational decisions.
- ED. 254. ORGANIZATION AND ADMINISTRATION OF PUPIL SERVICES. (2)  
Prerequisites, Ed. 261 or permission of instructor. Instilling the guidance point of view and implementing guidance practices.
- ED. 259. COUNSELING IN ELEMENTARY SCHOOLS. (3)  
Enrollment by permission of instructor. For elementary school counselors or advanced students preparing for elementary school counseling. The functions of a counselor in elementary school covering both general guidance and interview functions.
- ED. 260. SCHOOL COUNSELING: THEORETICAL FOUNDATIONS AND PRACTICE. (3)  
Prerequisites, Ed. 161, 250, 253. Exploration of learning theories as applied to counseling in schools, and practices which stem from such theories.
- ED. 261. PRACTICUM IN COUNSELING. (2-6)  
Prerequisites, Ed. 260 and permission of instructor. Sequence of supervised counseling experiences of increasing complexity. Limited to eight applicants in advance. Two hour class plus laboratory.
- ED. 262. MEASUREMENT IN PUPIL APPRAISAL. (3)  
Prerequisite, Ed. 150. Study of group tests typically employed in school testing programs; discussion of evidence relating to the measurement of abilities.
- ED. 265. THEORY OF MEASUREMENT. (2)  
Prerequisites, Ed. 150 and 151. Treats such topics as theory and techniques used in various scaling methods, test analysis, predictive accuracy of scores, and equivalence of scores. For students desiring more advanced treatment of problems.

## EDUCATION, EARLY CHILDHOOD EDUCATION

- ED. 267. CURRICULUM CONSTRUCTION THROUGH COMMUNITY ANALYSIS. (2)  
Prerequisites, Ed. 163, 164, 165. Selected research problems in the field of community study with emphasis on the Baltimore area.
- ED. 269. COUNSELING AND PUPIL SERVICES SEMINAR. (2)  
Enrollment by permission of instructor.
- ED. 271. ADVANCED STATISTICS IN EDUCATION (3)  
Prerequisite, Ed. 251 or equivalent. Primarily for the education student desiring more advanced work in statistical methodology. Survey of major types of statistical design in educational research; application of multivariate statistical techniques to educational problems.
- ED. 281. SOURCE MATERIALS IN EDUCATION. (2)  
Bibliography development through a study of source materials in education, special fields in education, and for seminar papers and theses.
- ED. 288. SPECIAL PROBLEMS IN EDUCATION. (1-6)  
Master of education or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for credit under this number. Course card must have the title of the problem and the name of the faculty member under whom the work will be done.
- ED. 399. RESEARCH—THESIS. (1-6)  
Students who desire credit for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

## EARLY CHILDHOOD EDUCATION

### *For Advanced Undergraduates and Graduates*

- C. ED. 110. CHILD DEVELOPMENT III. (3)  
Developmental growth of the child from the prenatal period through the early childhood years, with implications for home and school practice. For students in other colleges of the University.
- C. ED. 115. CHILDREN'S ACTIVITIES AND ACTIVITIES MATERIALS. (3)  
Prerequisites, C. Ed. 50, 51, or 110. Laboratory fee, \$5.00. Storytelling; selection of books for pre-school children; the use, preparation, and presentation of such raw materials as clay, paints (easel and finger), blocks, wood, and scrap materials for nursery school and kindergarten.
- C. ED. 116. CREATIVE MUSIC FOR YOUNG CHILDREN. (2-3)  
Prerequisite, Mus. 16 or equivalent. Creative experiences in songs and rhythms; correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level.
- C. ED. 140. CURRICULUM INSTRUCTION AND OBSERVATION—EARLY CHILDHOOD EDUCATION. (3)  
Prerequisites, C. Ed. 50, 51, or 110. Philosophy of early childhood education, observation of the developmental needs at various age levels, with emphasis upon the activities, materials, and methods by which education objectives are attained.



## EARLY CHILDHOOD, HUMAN DEVELOPMENT EDUCATION

### C. ED. 145. GUIDANCE OF YOUNG CHILDREN. (3)

Development of an appreciation and understanding of young children from different home and community backgrounds; study of individual and group problems.

### C. ED. 160. TEACHER-PARENT RELATIONSHIPS. (3)

A study of the methods and materials, trends, and problems in establishing close home-school relationships.

## HUMAN DEVELOPMENT EDUCATION

### *For Advanced Undergraduates and Graduates*

### H. D. ED. 102, 103, 104. CHILD DEVELOPMENT LABORATORY I, II, AND III. (2,2,2)

These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual, presents the accumulating data from time to time to the study group for criticism and group analysis and writes an interpretation of the dynamics underlying the child's learning behavior and development. Provides opportunity for teachers in service to earn credit for participation in their own local child study group.

### *For Graduates (offered through University College only on Baltimore Campus)*

### H. D. ED. 200. INTRODUCTION TO HUMAN DEVELOPMENT AND CHILD STUDY. (3)

This course offers a general overview of the scientific principles which describe human development and behavior and makes use of these principles in the study of individual children. Each student will observe and record the behavior of an individual child throughout the semester and must have one half-day a week free for this purpose. The course is basic to further work in child study and serves as a prerequisite for advanced courses where the student has not had field work or at least six weeks of workshop experience in child study.

### H. D. ED. 201. BIOLOGICAL BASES OF BEHAVIOR. (3)

H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 201 or concurrently. Emphasizes that understanding human life, growth, and behavior depends on understanding the ways in which the body is able to capture, control, and expand energy. Application throughout is made to human body processes and implications for understanding and working with people. H. D. Ed. 250 a or b or c may be taken concurrently with this course.

### H. D. ED. 202. SOCIAL BASES OF BEHAVIOR. (3)

H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 202 or concurrently. This course analyzes the socially inherited and transmitted patterns of pressures, expectations and limitations learned by an individual as he grows up. These are considered in relation to the patterns of feeling and behaving which emerge as the result of growing up in one's social group. H. D. Ed. 250 a or b or c may be taken concurrently with this course.

### H. D. ED. 250A, 250B, 250C. DIRECT STUDY OF CHILDREN. (1,1,1)

This course provides the opportunity to observe and record the behavior of an individual child in a nearby school. These records will be used in conjunction



with the advanced courses in Human Development and this course will be taken concurrently with such courses. Teachers active in their jobs while taking advanced courses in Human Development may use records from their own classrooms for this course. May not be taken concurrently with H. D. Ed. 102, 103, 104, or H. D. Ed. 200.

### INDUSTRIAL EDUCATION

#### IND. ED. 1. MECHANICAL DRAWING. (2)

Two laboratory periods a week. This course constitutes an introduction to orthographic multi-view and isometric projection. Emphasis is placed upon the visualization of an object when it is represented by a multi-view drawing and upon the making of multi-view drawings. The course carries through auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters. Laboratory fee, \$5.00.

#### IND. ED. 21. MECHANICAL DRAWING. (2)

Two laboratory periods a week. Prerequisite, Ind. Ed. 1. Laboratory fee, \$5.00. A course dealing with working drawings, machine design, pattern layouts, tracing and reproduction. Detail drawings followed by assemblies are presented.

#### IND. ED. 28. ELECTRICITY I. (2)

Two laboratory periods a week. An introductory course to electricity in general. It deals with the electrical circuit, elementary wiring problems, the measurement of electrical energy, and a brief treatment of radio. Laboratory fee, \$5.00.

#### IND. ED. 48. ELECTRICITY II. (2)

Principles involved in A-C and D-C electrical equipment, including heating measurement, motors and control, electro-chemistry, the electric arc, inductance and reactance, condensers, radio, and electronics. Laboratory fee, \$5.00.

#### IND. ED. 50. METHODS OF TEACHING. (2)

For vocational and occupational teachers of shopwork and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; measuring results and grading student progress in shop and related technical subjects.

#### IND. ED. 60. OBSERVATION AND DEMONSTRATION TEACHING. (2)

(Offered in Baltimore only.) Prerequisite, Educational Psychology and/or Methods of Teaching Vocational and Occupational Subjects. Primarily for vocational and occupational teachers. Sixteen hours of directed observation and demonstration teaching. Reports, conferences, and critiques constitute the remainder of scheduled activities in this course.

#### IND. ED. 84. ORGANIZED AND SUPERVISED WORK EXPERIENCES. (3)

This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry". The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him in regard to the job opportunities which have optimum learning value. The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences. The time basis for each internship period is 6 forty-hour weeks or 240 hours. More complete details are found in the handbook prepared for the student of this curriculum.

## INDUSTRIAL EDUCATION

### IND. ED. 124. ORGANIZED AND SUPERVISED WORK EXPERIENCE. (3)

This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry". The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him in regard to the job opportunities which have optimum learning value. The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences. The time basis for each internship period is 6 forty-hour weeks or 240 hours. More complete details are found in the handbook prepared for the student of this curriculum.

### *For Advanced Undergraduates and Graduates*

### IND. ED. 115. RESEARCH AND EXPERIMENTATION IN INDUSTRIAL ARTS. (3) (New Course)

This is a laboratory-seminar course designed to develop persons capable of planning, directing, and evaluating effective research and experimentation procedures with the materials, products, and processes of industry.

### IND. ED. 121. INDUSTRIAL ARTS IN SPECIAL EDUCATION. (3) (New Course)

Four hours laboratory per week, one hour lecture. Prerequisite, Sp. Ed. 170 and 171 or consent of instructor. Laboratory fee, \$5.00. This course provides experiences of a technical and theoretical nature in industrial processes applicable for classroom use. Emphasis is placed on individual research in the specific area of one major interest in special education.

### IND. ED. 125, 126. INDUSTRIAL TRAINING IN INDUSTRY I, II. (3,3)

The first course is designed to provide an overview of the function of industrial training, type of programs, organization, development and evaluation. The second course (prerequisite the first course) is designed to study specific training programs in a variety of industries, plant program visitation, training program development, and analyses of industrial training research.

### IND. ED. 143. INDUSTRIAL SAFETY EDUCATION I. (2)

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls.

### IND. ED. 144. INDUSTRIAL SAFETY EDUCATION II. (2)

This course presents exemplary safety practices through conference discussions, group demonstrations, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated.

### IND. ED. 150. TRAINING AIDS DEVELOPMENT. (3)

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such aids will be required.

### IND. ED. 161. PRINCIPLES OF VOCATIONAL GUIDANCE. (2)

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students.

IND. ED. 164. SHOP ORGANIZATION AND MANAGEMENT. (2)

This course covers the basic elements of organizing and managing an Industrial Education program including the selection of equipment and the arrangement of the shop.

IND. ED. 165. MODERN INDUSTRY. (3)

This course provides an overview of manufacturing industry in the American social, economic and culture pattern. Representative basic industries are studied from the viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, and the like.

IND. ED. 167. PROBLEMS IN OCCUPATIONAL EDUCATION. (2)

The purpose of this course is to secure, assemble, organize, and interpret data relative to the scope, character and effectiveness of occupational education.

IND. ED. 168. TRADE OR OCCUPATIONAL ANALYSIS. (2)

Provides a working knowledge of occupational and job analysis which is basic in organizing vocational-industrial courses of study. This course should precede Ind. Ed. 169.

IND. ED. 169. COURSE CONSTRUCTION. (2)

Surveys and applies techniques of building and reorganizing courses of study for effective use in vocational and occupational schools.

IND. ED. 170. PRINCIPLES OF VOCATIONAL EDUCATION. (2)

The course develops the Vocational Education movement as an integral phase of the American program of public education.

IND. ED. 171. HISTORY OF VOCATIONAL EDUCATION. (2)

An overview of the development of Vocational Education from primitive times to the present.

IND. ED. 175. RECENT TECHNOLOGICAL DEVELOPMENTS IN PRODUCTS AND PROCESSES. (3)

This course is designed to give the student an understanding of recent technological developments as they pertain to the products and processes of industry. The nature of the newer products and processes is studied as well as their effect upon modern industry and/or society.

*For Graduates (offered through University College only on  
Baltimore Campus)*

IND. ED. 207. PHILOSOPHY OF INDUSTRIAL ARTS EDUCATION. (3)

This course is intended to assist the student in his development of a point of view in regard to Industrial Arts and its relationship with the total educational program. He should, thereby, have a "yardstick" for appraising current procedures and proposals and an articulateness for his own professional area.

IND. ED. 214. SCHOOL SHOP PLANNING AND EQUIPMENT SELECTION. (3)

This course deals with principles involved in planning a school shop and provides opportunities for applying these principles. Facilities required in the operation of a satisfactory shop program are catalogued and appraised.

IND. ED. 216. SUPERVISION OF INDUSTRIAL ARTS. (2)



## INDUSTRIAL, LIBRARY SCIENCE EDUCATION

### IND. ED. 240. RESEARCH IN INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. (2)

This is a course offered by arrangement for persons who are conducting research in the areas of Industrial Arts and Vocational Education.

### IND. ED. 241. CONTENT AND METHOD OF INDUSTRIAL ARTS. (3)

Various methods and procedures used in curriculum development are examined and those suited to the field of Industrial Arts education are applied. Methods of and devices for Industrial Arts instruction are studied and practiced.

### IND. ED. 248. SEMINAR IN INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. (2)

## LIBRARY SCIENCE EDUCATION

### *For Advanced Undergraduates and Graduates*

#### L. S. ED. 120. INTRODUCTION TO LIBRARIANSHIP. (3 HOURS)

An overview of the library profession. Development of public, academic, special and school library services. History of books and libraries. The library as a social institution. The impact of communication media on society. Philosophy of librarianship. Professional standards, organizations and publications.

#### L. S. ED. 122. BASIC REFERENCE AND INFORMATION SOURCES. (3 HOURS)

Evaluation, selection, and utilization of information sources, in subject areas, including encyclopedias, dictionaries, periodical indexes, atlases, yearbooks. Study of bibliographical methods and form.

#### L. S. ED. 124. BOOK SELECTION AND EVALUATION FOR CHILDREN AND YOUTH. (3 HOURS)

Principles of book selection for school libraries and children's collections. Book selection aids and reviewing media. Influence of the community and curriculum on selection. Evaluation of publishers, editions, translations, series.

#### L. S. ED. 126. CATALOGING AND CLASSIFICATION OF LIBRARY MATERIALS. (3 HOURS)

Principles and practice in the organization of library materials. Dewey Decimal Classification, rules for the dictionary catalog, Sears subject headings. Treatment of non-book materials. Cataloging aids and tools.

#### L. S. ED. 128. SCHOOL LIBRARY ADMINISTRATION AND SERVICE. (3 HOURS)

Acquisition, circulation, utilization and maintenance of library materials. Organization of effective school library programs. School library quarters and equipment. Publicity and exhibits. Evaluation of library services.

#### L. S. ED. 130. LIBRARY MATERIALS FOR CHILDREN. (3 HOURS)

Reading interests of children. Advanced study of children's literature. Survey of informational materials in subject fields including: books, periodicals, films, filmstrips, records, pictures, pamphlet materials.

#### L. S. ED. 132. LIBRARY MATERIALS FOR YOUTH. (3)

Reading interests of young people. Literature for adolescents. Informational materials in subject fields including: books, periodicals, films, filmstrips, records, pictures, pamphlet materials.



## MUSIC EDUCATION

*For Advanced Undergraduates and Graduates*

MUS. ED. 128. MUSIC FOR THE ELEMENTARY CLASSROOM TEACHER. (2-3)  
Prerequisite, Mus. 16 or consent of instructor. A study of the group activities and materials through which the child experiences music. The course is designed to aid both music specialists and classroom teachers. It includes an outline of objectives and a survey of instructional methods.

MUS. ED. 175. METHODS AND MATERIALS IN VOCAL MUSIC FOR THE HIGH SCHOOL. (2-4)

Prerequisite, consent of instructor. A survey of suitable vocal and choral repertoire for the high school. Problems of diction interpretation, tone production, and phrasing. The course is designed primarily for choral directors and teachers of voice classes. The course may be repeated for credit since different repertoires are covered each time the course is offered.

MUS. ED. 180. INSTRUMENTAL MUSIC FOR THE HIGH SCHOOL. (2)

Prerequisite, consent of instructor. A survey of the repertoires for high school orchestra, band, and small ensemble. Problems of interpretations, intonation, tone quality, and rehearsal techniques. The course may be repeated for credit since different repertoires are covered each time the course is offered.

*For Graduates (offered through University College only on Baltimore Campus)*

MUS. ED. 204. CURRENT TRENDS IN MUSIC EDUCATION (SEMINAR). (2)

A survey of current philosophies and objectives of music in the schools. The scope and sequence of the music curricula, vocal and instrumental, on the elementary and secondary levels.

## SPECIAL EDUCATION

*For Advanced Undergraduates and Graduates*

SP. ED. 170. INTRODUCTION TO SPECIAL EDUCATION. (3)

Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures.

SP. ED. 171. CHARACTERISTICS OF EXCEPTIONAL CHILDREN. (3-6).

A. Mentally Retarded. B. Gifted. C. Perceptual Learning Problems. Studies the diagnosis, etiology, physical, social and emotional characteristics of exceptional children. Describes how the educational program should be modified to utilize the full capacity of these children.

SP. ED. 172. EDUCATION OF EXCEPTIONAL CHILDREN. (3-6)

A. Mentally Retarded. B. Gifted. C. Perceptual Learning Problems. Offers practical and specific methods of teaching exceptional children. Selected observation of actual teaching may be arranged. (Prerequisite, Sp. Ed. 171 or equivalent)

## SPECIAL EDUCATION, ENGINEERING, ENGLISH

### SP. ED. 173. CURRICULUM FOR EXCEPTIONAL CHILDREN. (3-6)

A. Mentally Retarded. B. Gifted.

Examines the principles and objectives guiding curriculum for exceptional children. Gives experience in developing curriculum for these children. Studies various curricula currently in use. (Prerequisite, Sp. Ed. 171 or equivalent)

*For Graduates (offered through University College only on  
Baltimore Campus)*

### SP. ED. 278. SEMINAR IN SPECIAL EDUCATION. (2)

An overview of education of exceptional children.

## ENGINEERING

Catalogs of the College of Engineering are on file in each Center of University College. Regular Students (see pages 11-12) who have met admission requirements of the College of Engineering and who have been admitted to the College Park campus, may apply for transfer to the College of Engineering in accord with General and Academic Regulations of the University.

A student whose grade is below "C" in any subject which is prerequisite to another subject in his proposed curriculum, is advised to repeat that subject and submit a C-or-better grade in it before applying for transfer. He will be required, before graduation, to have an average of at least C (2.0)—(a) in all subjects applicable to his degree, and (b) in all junior-senior subjects in his major department.

Besides English (Eng. 1, 2, 3, 4) and subjects in the "American Civilization program", the following freshman-sophomore subjects are common to engineering curricula: Math. 18, 19, 20, 21; Chem. 1, 3; Phys. 20, 21; E. S. 1, 10 (and E. S. 20, 21 in some curricula). The following subjects are usually offered in the summer at College Park: C. E. 110 (in a two-week period intensively just after Commencement); and E. S. 10, E. S. 20, E. S. 21, E. E. 1, and M. E. 1 in the regular 8-week Summer Session.

## ENGLISH LANGUAGE AND LITERATURE

### ENG. 1, 2. COMPOSITION AND AMERICAN LITERATURE. (3,3)

Eng. 1 is the prerequisite of Eng. 2. Grammar, rhetoric, and mechanics of writing; frequent themes. Readings are in American literature. Required of Freshman.

### ENG. 3, 4. COMPOSITION AND WORLD LITERATURE. (3,3)

Prerequisite, Eng. 2. Required of Sophomores. Practice in composition. An introduction to world literature, foreign classics being read in translation.

### ENG. 7. TECHNICAL WRITING. (2)

Prerequisite, Eng. 2 or 21. For students desiring practice in writing reports, technical essays, or popular essays on technical subjects.

ENG. 8. COLLEGE GRAMMAR. (3)

Prerequisite, Eng. 2 or 21. An analytical study of modern English grammar.

ENG. 12. INTRODUCTION TO CREATIVE WRITING. (3)

Prerequisite, Eng. 2 or 21.

ENG. 14. EXPOSITORY WRITING. (3)

Prerequisite, Eng. 2 or 21. Credit will not be given for Eng. 7 in addition to Eng. 14. Methods and problems of exposition; practice in several kinds of informative writing. Not offered on the College Park campus.

ENG. 55. ENGLISH LITERATURE FROM THE BEGINNINGS TO 1800. (3)

Prerequisite, Eng. 2 or 21.

ENG. 56. ENGLISH LITERATURE FROM 1800 TO THE PRESENT. (3)

Prerequisite, Eng. 2 or 21.

*For Advanced Undergraduates and Graduates*

English 4 and Junior standing are prerequisite to courses numbered 101-199.

ENG. 101. HISTORY OF THE ENGLISH LANGUAGE. (3)

ENG. 107. AMERICAN ENGLISH. (3)

The English language as developed in the United States. Dialects, vocabulary, past and present problems of usage.

ENG. 115, 116. SHAKESPEARE. (3,3)

Twenty-one important plays.

ENG. 121. MILTON. (3)

ENG. 129, 130. LITERATURE OF THE ROMANTIC PERIOD. (3,3)

ENG. 134, 135. LITERATURE OF THE VICTORIAN PERIOD. (3,3)

ENG. 139, 140. THE ENGLISH NOVEL. (3,3)

English novels of the eighteenth and nineteenth centuries.

ENG. 143. MODERN POETRY. (3)

The chief British and American poets of the twentieth century.

ENG. 144. MODERN DRAMA. (3)

The drama from Ibsen to the present.

ENG. 145. THE MODERN NOVEL. (3)

Major English and American novelists of the twentieth century.

ENG. 148. THE LITERATURE OF AMERICAN DEMOCRACY. (3)

ENG. 150, 151. AMERICAN LITERATURE. (3,3)

Representative American poetry and prose from colonial times to the present, with special emphasis on the literature of the nineteenth century.

ENG. 152. THE NOVEL IN AMERICA. (3)

A historical survey of the development of the American novel from its 18th century beginnings to the twentieth century.

ENG. 155, 156. MAJOR AMERICAN WRITERS. (3,3)

Two writers studied intensively each semester.

## ENGLISH, GEOGRAPHY

### ENG. 157. INTRODUCTION TO FOLKLORE. (3)

Historical background of folklore studies; types of folklore with particular emphasis on folktales and folksongs, and on American folklore.

### ENG. 160. ADVANCED EXPOSITORY WRITING. (3)

Theories of composition; practice in writing essays and critical papers.

### ENG. 170. CREATIVE WRITING. (3)

### ENG. 171. ADVANCED CREATIVE WRITING. (3)

Prerequisite, permission of the instructor.

## GEOGRAPHY

### GEOG. 20, 21. ECONOMIC GEOGRAPHY. (3,3)

Not offered on College Park campus. Cannot be taken for credit by students who have had Geog. 1 and 2. Study of the nature and geographic distribution of the world's resources, its agricultural, mineral, and other industries in relation to such basic factors as land forms, climates, population centers, and trade routes.

### *For Advanced Undergraduates and Graduates*

### GEOG. 100. REGIONAL GEOGRAPHY OF EASTERN ANGLO-AMERICA. (3)

Prerequisite, Geog. 20, 21, or Geog. 10, or permission of the instructor. A study of the cultural and economic geography and the geographic regions of Eastern United States and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background.

### GEOG. 101. REGIONAL GEOGRAPHY OF WESTERN ANGLO-AMERICA. (3)

Prerequisite, Geog. 20, 21, or Geog. 10, or permission of the instructor. A study of Western United States, Western Canada and Alaska along the lines mentioned under Geog. 100.

### GEOG. 103. GEOGRAPHIC CONCEPTS AND SOURCE MATERIALS. (3)

A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.

### GEOG. 104. GEOGRAPHY OF MAJOR WORLD REGIONS. (3)

A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the Far East, and Latin America. Emphasis upon the casual factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

### GEOG. 105. GEOGRAPHY OF MARYLAND AND ADJACENT AREAS. (3)

An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the State of Maryland and adjacent areas.



## GEOGRAPHY, GOVERNMENT AND POLITICS

### GEOG. 110. ECONOMIC AND CULTURAL GEOGRAPHY OF CARIBBEAN AMERICA. (3)

An analysis of the physical framework, broad economic and historical trends, cultural patterns, and regional diversification of Mexico, Central America, the West Indies, and parts of Columbia and Venezuela.

### GEOG. 111. ECONOMIC AND CULTURAL GEOGRAPHY OF SOUTH AMERICA. (3)

A survey of natural environment and resources, economic development and cultural diversity of the South American republics, with emphasis upon problems and prospects of the countries.

### GEOG. 120. GEOGRAPHY OF EUROPE. (3)

Agricultural and industrial development of Europe and present-day problems in relation to the physical and cultural setting of the continent and its natural resources.

### GEOG. 125. GEOGRAPHY OF ASIA. (3)

Lands, climates, natural resources and major economic activities in Asia (except Soviet Asia). Outstanding differences between major regions.

### GEOG. 130. ECONOMIC AND POLITICAL GEOGRAPHY OF EASTERN ASIA. (3)

Study of China, Korea, Japan, the Philippines; physical geographic setting; population; economic and political geography. Potentialities of major regions and recent developments.

### GEOG. 131. ECONOMIC AND POLITICAL GEOGRAPHY OF SOUTH AND SOUTHEAST ASIA. (3)

Study of the Indian subcontinent, Farther India, Indonesia: physical geographic setting; population; economic and political geography. Potentialities of various countries and regions and their role in present Asia.

### GEOG. 134. CULTURAL GEOGRAPHY OF CHINA AND JAPAN. (3)

Survey of geographical distribution and interpretation of cultural patterns of China and Japan. Emphasis on basic cultural institutions, outlook on life, unique characteristics of various groups. Trends of cultural change and contemporary problems.

### GEOG. 140. GEOGRAPHY OF THE USSR. (3)

The natural environment and its regional diversity. Geographic factors in the expansion of the Russian State. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population.

### GEOG. 190. POLITICAL GEOGRAPHY. (3)

Geographical factors in national power and international relations; an analysis of the role of "Geopolitics" and "Geostrategy," with special reference to the current world scene.

## GOVERNMENT AND POLITICS

### G. & P. 1. AMERICAN GOVERNMENT. (3)

This course is designed as the basic course in government for the American Civilization program, and it or its equivalent is a prerequisite to all other courses in the Department. It is a comprehensive study of governments in the United States—national, state, and local.

## GOVERNMENT AND POLITICS

- G. & P. 3. PRINCIPLES OF GOVERNMENT AND POLITICS. (3)  
A study of the basic principles and concepts of political science.
- G. & P. 60. STATE AND LOCAL GOVERNMENT. (3)  
Prerequisite, G. & P. 1. A study of the functioning and problems of state and local government in the United States with illustrations from Maryland jurisdictions.
- G. & P. 97. MAJOR FOREIGN GOVERNMENTS. (3)  
Prerequisite, G. & P. 1. An examination of characteristic governmental institutions and political processes in selected major powers, such as Britain, Russia, France, Germany, Italy, Japan, and China. Students may not receive credit in this course and also obtain credit in G. & P. 7, 8, or 10.

### *For Advanced Undergraduates and Graduates*

- G. & P. 101. INTERNATIONAL POLITICAL RELATIONS. (3)  
Prerequisite, G. & P. 1. A study of the major factors underlying international relations, the influence of geography, climate, nationalism, and imperialism, and the development of foreign policies of the major powers.
- G. & P. 102. INTERNATIONAL LAW. (3)  
Prerequisite, G. & P. 1. Fundamental principles governing the relations of states, including matters of jurisdiction over landed territory, water, airspace, and persons; treatment of aliens; treaty-making; diplomacy; and the laws of war and neutrality.
- G. & P. 104. INTER-AMERICAN RELATIONS. (3)  
Prerequisite, G. & P. 1. An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.
- G. & P. 105. RECENT FAR EASTERN POLITICS. (3)  
Prerequisite, G. & P. 1. The background and interpretation of recent political events in the Far East and their influence on world politics.
- G. & P. 106. AMERICAN FOREIGN RELATIONS. (3)  
Prerequisite, G. & P. 1. The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major policies of the United States.
- G. & P. 108. INTERNATIONAL ORGANIZATION. (3)  
Prerequisite, G. & P. 1. A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations and such functional and regional organizations as the Organization of American States.
- G. & P. 109. FOREIGN POLICY OF THE USSR. (3)  
Prerequisite, G. & P. 1. A study of the development of the foreign policy of the Soviet Union, with attention paid to the forces and conditions that make for continuities and changes from tsarist policies.
- G. & P. 110. PRINCIPLES OF PUBLIC ADMINISTRATION. (3)  
Prerequisite, G. & P. 1. A study of public administration in the United States, giving special attention to the principles of organization and management and to fiscal, personnel, planning, and public relations practices.
- G. & P. 111. PUBLIC PERSONNEL ADMINISTRATION. (3)  
Prerequisite, G. & P. 110 or B.A. 160. A survey of public personnel adminis-

tration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations and retirement.

## G. & P. 112. PUBLIC FINANCIAL ADMINISTRATION. (3)

Prerequisite, G. & P. 110 or Econ. 142. A survey of governmental financial procedures, including processes of current and capital budgeting, the administration of public borrowing, the techniques of public purchasing, and the machinery of control through pre-audit and post-audit.

## G. & P. 124. LEGISLATURES AND LEGISLATION. (3)

Prerequisite, G. & P. 1. A comprehensive study of legislative organization, procedure, and problems.

## G. & P. 131, 132. CONSTITUTIONAL LAW. (3,3)

Prerequisite, G. & P. 1. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution; the position of the states in the federal system; state and federal powers over commerce; due process of law and other civil rights.

## G. & P. 133. ADMINISTRATION OF JUSTICE. (3)

Prerequisite, G. & P. 1. An examination of civil and criminal court structure and procedures in the United States at all levels of government, with special emphasis upon the federal judiciary.

## G. & P. 141. HISTORY OF POLITICAL THEORY. (3)

Prerequisite, G. & P. 1. A survey of the principal political theories set forth in the works of writers from Plato to Bentham.

## G. & P. 142. RECENT POLITICAL THEORY. (3)

Prerequisite, G. & P. 1. A study of 19th and 20th century political thought, with special emphasis on recent theories of socialism, communism, and fascism.

## G. & P. 144. AMERICAN POLITICAL THEORY. (3)

Prerequisite, G. & P. 1. A study of the development and growth of American political concepts from the colonial period to the present.

## G. & P. 154. PROBLEMS OF WORLD POLITICS. (3)

Prerequisite, G. & P. 1. A study of governmental problems of international scope, such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.

## G. & P. 160. STATE AND LOCAL ADMINISTRATION. (3)

Prerequisite, G. & P. 1. A study of the administrative structure, procedures, and policies of state and local governments with special emphasis on the state level and on intergovernmental relationships, and with illustrations from Maryland governmental arrangements.

## G. & P. 174. POLITICAL PARTIES. (3)

Prerequisite, G. & P. 1. A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.

## G. & P. 178. PUBLIC OPINION. (3)

Prerequisite, G. & P. 1. An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda, and pressure groups.

## GOVERNMENT AND POLITICS

### G. & P. 181. ADMINISTRATIVE LAW. (3)

Prerequisite, G. & P. 1. A study of the discretion exercised by administrative agencies, including analysis of their functions, their powers over persons and property, their procedures, and judicial sanctions and controls.

### G. & P. 191. THE GOVERNMENT AND ADMINISTRATION OF THE SOVIET UNION. (3)

Prerequisite, G. & P. 1. A study of the adoption of the communist philosophy by the Soviet Union, of its governmental structure, and of the administration of government policy in the Soviet Union.

### G. & P. 197. COMPARATIVE GOVERNMENTAL INSTITUTIONS. (3)

Prerequisite, G. & P. 1. A study of major political institutions, such as legislatures, executives, courts, administrative systems, and political parties, in selected foreign governments.

*For Graduates (offered through University College at Pentagon only)*

### G. & P. 201. SEMINAR IN INTERNATIONAL POLITICAL ORGANIZATION. (3)

A study of the forms and functions of various international organizations.

### G. & P. 202. SEMINAR IN INTERNATIONAL LAW. (3)

Reports on selected topics assigned for individual study and reading in substantive and procedural international law.

### G. & P. 205. SEMINAR IN AMERICAN POLITICAL INSTITUTIONS. (3)

Reports on topics assigned for individual study and reading in the background and development of American government.

### G. & P. 206. SEMINAR IN AMERICAN FOREIGN RELATIONS. (3)

Reports of selected topics assigned for individual study and reading in American foreign policy and the conduct of American foreign relations.

### G. & P. 207. SEMINAR IN COMPARATIVE GOVERNMENTAL INSTITUTIONS. (3)

Reports on selected topics assigned for individual study and reading in governmental and political institutions in governments throughout the world.

### G. & P. 211. SEMINAR IN FEDERAL-STATE RELATIONS. (3)

Reports on topics assigned for individual study and reading in the field of recent federal-state relations.

### G. & P. 213. PROBLEMS OF PUBLIC ADMINISTRATION. (3)

Reports on topics assigned for individual study and reading in the field of public administration.

### G. & P. 214. PROBLEMS OF PUBLIC PERSONNEL ADMINISTRATION. (3)

Reports on topics assigned for individual study in the field of public personnel administration.

### G. & P. 216. GOVERNMENT ADMINISTRATIVE PLANNING AND MANAGEMENT. (3)

Reports on topics assigned for individual study and reading in administrative planning and management in government.

### G. & P. 217. GOVERNMENT CORPORATIONS AND SPECIAL PURPOSE AUTHORITIES. (3)

Reports on topics assigned for individual study and reading in the use of the corporate form for governmental administration. The topics for study will



## GOVERNMENT AND POLITICS, HEALTH

relate to the use of the corporate form as an administrative technique, as in the case of the Tennessee Valley Authority, the Port of New York Authority, and local housing authorities.

- G. & P. 221. SEMINAR IN PUBLIC OPINION. (3)  
Reports on topics assigned for individual study and reading in the field of public opinion.
- G. & P. 223. SEMINAR IN LEGISLATURES AND LEGISLATION. (3)  
Reports on topics assigned for individual study and reading about the composition and organization of legislatures and about the legislative process.
- G. & P. 224. SEMINAR IN POLITICAL PARTIES AND POLITICS. (3)  
Reports on topics assigned for individual study and reading in the fields of political organization and action.
- G. & P. 225. MAN AND THE STATE. (3)  
Individual reading and reports on such recurring concepts on political theory as liberty, equality, justice, natural law and natural rights, private property, sovereignty, nationalism, and the organic state.
- G. & P. 231. SEMINAR IN PUBLIC LAW. (3)  
Reports on topics assigned for individual study and reading in the fields of constitutional and administrative law.
- G. & P. 251. BIBLIOGRAPHY OF GOVERNMENT AND POLITICS. (3)  
Survey of the literature of the various fields of government and politics and instruction in the use of government documents.
- G. & P. 261. PROBLEMS OF GOVERNMENT AND POLITICS. (3)  
An examination of contemporary problems in the various fields of government and politics, with reports on topics assigned for individual study.
- G. & P. 399. THESIS RESEARCH.  
(Arranged).

## HEALTH

In addition to the Health courses listed below consult the College of Physical Education, Recreation and Health catalog for graduate level courses in the Health field.

### *For Advanced Undergraduates and Graduates*

- HEA. 120. METHODS AND MATERIALS IN HEALTH EDUCATION. (3)  
Prerequisites, Hea. 40 or equivalent. This course considers various plans of teaching health in schools and elsewhere. Health education teaching methods and materials are evaluated with regard to their application to practical situations.
- HEA. 145. ADVANCED DRIVER EDUCATION. (3)  
Prerequisites, Hea. 50, 60, 70, 80, 105. Progressive techniques, supervision, and practice of advanced driver-education; comprehensive programming for traffic safety; psychology of traffic safety; improving the attitudes of young drivers; teaching to meet driving emergencies; program planning in driver-education; consumer education; resources and agencies; the teacher and driver-education; measuring and evaluating results; driver-education for adults; new developments in driver-education; insurance and liability; and the future of driver-education.

## HEALTH

### \*HEA. 160. PROBLEMS IN SCHOOL HEALTH EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS. (2-6)

This is a workshop type of course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction.

### \*HEA. 170. THE HEALTH PROGRAM IN THE ELEMENTARY SCHOOL. (3)

Prerequisites, Hea. 2 and 4 or Hea. 40. This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education.

The total school health program is surveyed from the standpoint of organization and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.)

### \*HEA. 178. FUNDAMENTALS OF SEX EDUCATION. (3)

This course is concerned with basic information regarding the physical, psychological, social, historical, and comparative cultural aspects of sex. The adjustment needs and problems of children and adults during the course of maturing and aging are studied, and special consideration is given to the sex education program in schools.

### \*HEA. 190. ADMINISTRATION AND SUPERVISION OF SCHOOL HEALTH EDUCATION. (3)

The application of the principles of administration and supervision to school health education. This course involves observation and field work in school and community health programs.

*For Graduates (offered through University College only on  
Baltimore Campus)*

### HEA. 201. FOUNDATIONS IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

A study of history, philosophy and principles of Physical Education, Recreation and Health as applied to current problems in each area and as related to general education.

### HEA. 203. SUPERVISORY TECHNIQUES IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

### HEA. 210. METHODS AND TECHNIQUES OF RESEARCH. (3)

A study of methods and techniques of research used in Physical Education, Recreation and Health Education; an analysis of examples for their use; and practice in their application to problems of interest to the student.

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\* Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

**HEA. 220. SCIENTIFIC FOUNDATIONS OF HEALTH EDUCATION. (3)**

A course dealing with an analysis of hereditary, physical, mental, and social factors which influence the total health status during the developmental process. The role of education in fostering physical and mental health is studied.

**HEA. 230. SOURCE MATERIAL SURVEY. (3)**

A library survey course, covering the total areas of Physical Education, Recreation and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

**HEA. 240. MODERN THEORIES OF HEALTH. (3)**

The purpose of this course is to familiarize advanced students in health education with modern theories of health and disease which involve so-called mind-body relationships. Major topics of study and analysis include the theories of psychosomatics, stress, hypnosis and constitutional psychology.

**HEA. 250. HEALTH PROBLEMS IN GUIDANCE. (3)**

A course designed to familiarize guidance counselors with principles of health and with common deviations from health, especially during the school years. Implications of health for pupil effectiveness in the entire curriculum, including extra-class activities, are dealt with. Special attention is given to psychosomatic disturbances which are commonly an aspect of personal problem situations. Methods of dealing with health problems and utilizing available resources of school and community are discussed.

**HEA. 280. THE SCIENTIFIC BASES OF EXERCISE. (3)**

Prerequisites, Anatomy, Physiology, P. E. 100, P. E. 160, or the equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

**HEA. 290. ADMINISTRATIVE DIRECTION OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

**HEA. 291. CURRICULUM CONSTRUCTION IN PHYSICAL EDUCATION AND HEALTH. (3)**

A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

## HISTORY

**H. 5, 6. HISTORY OF AMERICAN CIVILIZATION. (3,3)**

Required of all students who entered the University after 1944-45. Normally to be taken in the sophomore year. An historical survey of the main forces in American life with emphasis upon the development of our democratic heritage. First semester from the colonial period through the Civil War. Second semester, since the Civil War.



## HISTORY

### H. 41, 42. WESTERN CIVILIZATION. (3,3)

These courses are designed to give the student an appreciation of the civilization in which he lives in its broadest setting. The study begins with the collapse of classical civilization and comes to the present.

### H. 53, 54. HISTORY OF ENGLAND AND GREAT BRITAIN. (3,3)

A history of the development of British life and institutions. Open to all classes. Especially recommended for English majors and minors and pre-law students. First semester: to 1485. Second semester: since 1485.

### H. 61, 62. FAR EASTERN CIVILIZATION. (3,3)

These courses seek to give the student an understanding of a great civilization radically different from our own and an appreciation of the complex problems of the Far East and of American policy there. The approach is interdisciplinary within an historical framework.

### *For Advanced Undergraduates and Graduates*

### H. 101. AMERICAN COLONIAL HISTORY. (3)

Prerequisites, H. 5, 6, or the equivalent. The settlement and development of colonial America to the middle of the eighteenth century.

### H. 102. THE AMERICAN REVOLUTION. (3)

Prerequisites, H. 5, 6, or the equivalent. The background and course of the American Revolution through the formation of the Constitution.

### H. 105. SOCIAL AND ECONOMIC HISTORY OF THE UNITED STATES TO 1865. (3)

Prerequisites, H. 5, 6, or the equivalent. A synthesis of American life from Independence through the Civil War.

### H. 106. SOCIAL AND ECONOMIC HISTORY OF THE UNITED STATES SINCE THE CIVIL WAR. (3)

Prerequisites, H. 5, 6, or the equivalent. The development of American life and institutions, with emphasis upon the period since 1876.

### H. 116. THE CIVIL WAR. (3)

Prerequisites, H. 5, 6, or the equivalent. Military aspects; problems of the Confederacy, political, social, and economic effects of the war upon American society.

### H. 118, 119. RECENT AMERICAN HISTORY. (3,3)

Prerequisites, H. 5, 6, or the equivalent. Party politics, domestic issues, foreign relations of the United States since 1890. First semester: through World War I. Second semester: since World War I.

### H. 127, 128. DIPLOMATIC HISTORY OF THE UNITED STATES. (3,3)

Prerequisites, H. 5, 6, or the equivalent. A historical study of the diplomatic negotiations and foreign relations of the United States. First semester: from the Revolution to the Civil War. Second semester: from the Civil War to the present.

### H. 129. THE UNITED STATES AND WORLD AFFAIRS. (3)

Prerequisites, H. 5, 6, or the equivalent. A consideration of the changed position of the United States with reference to the rest of the world since 1917.

### H. 133, 134. THE HISTORY OF IDEAS IN AMERICA. (3,3)

Prerequisites, H. 5, 6, or the equivalent. An intellectual history of the American people, embracing such topics as liberty, democracy, and social ideas.



- H. 141, 142. **HISTORY OF MARYLAND. (3,3)**  
Prerequisites, H. 5, 6, or the equivalent. First semester, a survey of the political, social and economic history of colonial Maryland. Second semester, Maryland's historical development and role as a state in the American Union.
- H. 145, 146. **LATIN AMERICAN HISTORY. (3,3)**  
Prerequisites, H. 5 and 6 or H. 41 and 42, or equivalent. A survey of the history of Latin America from colonial origins to the present, covering political, cultural, economic, and social development, with special emphasis upon relations with the United States. First semester: Colonial Latin America. Second semester: the Republics.
- H. 155. **MEDIEVAL CIVILIZATION. (3)**  
Prerequisites, H. 41, 42, or H. 53, 54, or equivalent. A survey of the history of Medieval life, culture, and institutions from the fall of the Roman Empire to the thirteenth century.
- H. 161. **THE RENAISSANCE AND REFORMATION. (3)**  
Prerequisites, H. 41, 42 or 53, or the permission of the instructor. The culture of the Renaissance, the Protestant revolt and Catholic reaction through the Thirty Years War.
- H. 163, 164. **HISTORY OF THE BRITISH EMPIRE. (3,3)**  
Prerequisites, H. 41, 42, or H. 53, 54. First semester, the development of England's Mercantilist Empire and its fall in the war for American Independence (1783). Second semester, the rise of the Second British Empire and the solution of the problem of responsible self-government (1783-1867), the evolution of the British Empire into a Commonwealth of Nations, and the development and problems of the dependent Empire.
- H. 167, 168. **HISTORY OF RUSSIA. (3,3)**  
A history of Russia from earliest times to the present.
- H. 169, 170. **EUROPE IN THE NINETEENTH CENTURY, 1815-1919. (3,3)**  
Prerequisites, H. 41, 42, or H. 53, 54. A study of the political, economic, social and cultural development of Europe from the Congress of Vienna to the First World War.
- H. 171, 172. **EUROPE IN THE WORLD SETTING OF THE TWENTIETH CENTURY. (3,3)**  
Prerequisites, H. 41, 42, or 53, 54. A study of political, economic, and cultural developments in twentieth century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance.
- H. 173. **THE SOVIET UNION. (3)**  
A history of the Bolshevik Revolution and the founding of the Soviet Union: the economic policy and foreign policy of the USSR to the present.

## FAMILY LIFE, FOOD, NUTRITION, INSTITUTION ADMINISTRATION

### COLLEGE OF HOME ECONOMICS

The College of Home Economics offers the following courses on the College Park and Baltimore Campuses.

#### FAMILY LIFE AND MANAGEMENT

##### H. M. 50. DECISION MAKING IN FAMILY LIVING. (3)

Prerequisite, consent of department. (Designed for second or third semester students.) Decision making in relation to family values, philosophies, goals, and resources, and general socio-economic conditions.

*For Advanced Undergraduates and Graduates*

##### F. L. 132. THE CHILD IN THE FAMILY. (3)

Prerequisite, Psych. 1; H. E. 5 or equivalent. Study of the child from prenatal stage through adolescence, with emphasis on responsibility for guidance in the home. Biological and psychological needs as they affect the child's relationship with his family and peers.

#### FOOD, NUTRITION, AND INSTITUTION ADMINISTRATION

##### F. & N. 5. FOOD AND NUTRITION OF INDIVIDUALS AND FAMILIES. (3)

Two lectures and one two-hour laboratory period a week. A study of food in contemporary living. The economic, social and esthetic implications of food as well as its nutritive value. Selection and use of food in relation to eating habits, health, and well-being of the individual. Survey of meal preparation and service applied to family situations. Laboratory fee \$3.00.

*For Advanced Undergraduates and Graduates*

##### NUTR. 123. NUTRITION FOR HEALTH SERVICES. (3)

A study of nutritional status and the effect of food habits and food consumption on family health. Nutritional requirements for individuals in different stages of development. Techniques and procedures for the application of nutrition knowledge with consideration of various economic levels and social background. For graduate nurses, dietitians, health teachers, and social workers. Laboratory fee, \$3.00. Offered in Baltimore.

*For Graduates (offered through University College only on  
Baltimore Campus)*

##### NUTR. 208. RECENT PROGRESS IN NUTRITION. (3)

Recent developments in the science of nutrition with emphasis on the interpretation of these findings for application in health and disease. Aids for the dietitian in creating a better understanding of nutrition among patients, students of graduate status and personnel, such as those in the dental and medical profession.

## HOME ECONOMICS

### *For Advanced Undergraduates and Graduates*

H. E. 170. COMMUNICATION SKILLS AND TECHNIQUES IN HOME ECONOMICS. (3)

Principles and techniques for professional demonstration and presentation of home economics and its related areas with selected experiences in television, radio, creative writing, and photography.

H. E. 190. SPECIAL PROBLEMS IN HOME ECONOMICS. (1-3)

Prerequisite, consent of instructor. Problem may be in any area of home economics and will carry the name of the subject matter of the problem. Laboratory fee, \$3.00 a semester hour.

### *For Graduates (offered through University College only on Baltimore Campus)*

H. E. 201. METHODS OF RESEARCH IN HOME ECONOMICS. (3)

Prerequisites, Statistics or Tests and Measurements. Application of scientific methods to problems in the field of home economics with emphasis on needed research of an inter-disciplinary nature.

H. E. 202. INTEGRATIVE ASPECTS OF HOME ECONOMICS. (2)

Prerequisite, consent of instructor. Scope and focus of total professional field with emphasis on purposes and functions as related to family and other group living. Impact of the changing social, economic, technological and educational situation upon home economics.

## PRACTICAL (APPLIED) ART

PR. ART. 1. DESIGN. (3)

Art expression through materials such as opaque water color, wet clay, colored chalk, and lithograph crayon which are conducive to freeing techniques. Elementary lettering, action figures, abstract design, three-dimensional design and general composition study. Consideration of art as applied to daily living. Laboratory fee, \$3.00.

## TEXTILES AND CLOTHING

T. & C. 5. TEXTILES AND CLOTHING IN CONTEMPORARY LIVING. (3)

Comparative analysis of the significance of fashions and fabrics to individuals and groups, in terms of their physical, psychological, and social needs. Application of textile technology to the choice and use of apparel and home furnishing textiles toward increasing satisfactions in changing modes of life. Laboratory fee, \$5.00.

## TEXTILES, CLOTHING, JOURNALISM, PUBLIC RELATIONS

### CLO. 10. PRINCIPLES AND METHODS OF CLOTHING DESIGN. (2)

Two lecture periods a week. Basic construction and fitting techniques of apparel demonstrated in relation to interpretation and use of commercial patterns. Esthetic and economic aspects as interrelated. Laboratory fee, \$10.00.

### CLO. 11. EXPERIMENTAL CLOTHING DESIGN. (2)

Two laboratory periods a week. Prerequisite, Clo. 10. Application of principles and methods of clothing construction with emphasis on management and analysis of values to be achieved. Laboratory fee, \$3.00.

### CLO. 21. PATTERN DESIGN. (3)

Three two-hour laboratory periods a week. Prerequisite, Clo. 10 and consent of department. Pattern study, figure analysis and pattern alteration, development and adaptation of individual basic pattern, creation of original designs. Laboratory fee, \$3.00.

### *For Advanced Undergraduates and Graduates*

### CLO. 120. DRAPING. (3)

Two laboratory periods a week. Prerequisite, Clo. 10. Demonstrations and practice in creating costumes in fabrics and on individual dress forms; modeling of garments for class criticism. Laboratory fee, \$3.00.

### CLO. 127. APPAREL DESIGN. (3)

One lecture and two laboratory periods a week. Prerequisite, Clo. 120. The art of costuming; trade and custom methods of clothing design and construction; advanced work in draping, pattern design and/or tailoring, with study of the interrelationship of these techniques. Laboratory fee, \$3.00.

## JOURNALISM AND PUBLIC RELATIONS

### *For Advanced Undergraduates and Graduates*

### JOUR. 165. FEATURE WRITING. (3)

Writing and selling of magazine and newspaper feature articles.

### P. R. 166. PUBLIC RELATIONS. (3)

Survey of public relations; general orientation, principles and techniques.

### P. R. 170. PUBLIC RELATIONS TECHNIQUES. (3)

Prerequisite, P. R. 166. Strategy and techniques of publicity operations. Practice in the use of major media of public communication; off-campus publicity projects.

### P. R. 171. INDUSTRIAL JOURNALISM. (3)

Prerequisite, senior standing. Introduction to industrial communications, management and production of company publications, public relations aspects of industrial journalism.

### P. R. 186. PUBLIC RELATIONS OF GOVERNMENT AND INTERNATIONAL ORGANIZATIONS. (3)

Prerequisite, P. R. 166. Study of public relations, publicity, propaganda, information services in public administration of governments.



## LANGUAGE AND LITERATURE, FOREIGN

All language courses include oral-aural practice as well as composition.

A student who has had only one year of foreign language in high school may take courses 1 and 2 of that same language and receive full University of Maryland credit.

A student who has had two years or more of a language in high school and who wishes to enroll for the same language in the Overseas Program may not receive credit for the first semester (Language 1). (If he desires, he may take the first semester course as review without credit.) Exceptions will be made in cases where a period of at least four years has elapsed between the date of graduation from high school and the actual date of enrollment in a specific language course. *A student may not establish credit in the freshman-sophomore courses of his native language.\**

Language 1 and Language 2 are considered as a unit; therefore, credit toward a degree will not be granted in Language 1 until Language 2 has been completed. A student who has finished Language 2 without having taken the prerequisite Language 1 course may meet curricular requirements either by taking nine additional hours in the same language or by taking three additional hours in the same language, plus six hours in another.

Language 1 and 2 cannot be taken concurrently. Credit for Language 1 cannot be established after credit has been received for Language 2. Language 6 and 7 cannot be taken concurrently.

A student with a high level of competence in a foreign language who is for any reason ineligible or unable to take credit by special examination\* may request a waiver of the 12-hour language requirement. The request must be addressed to the Dean of University College. If the waiver is granted, the student is exempted from taking any foreign language courses, but he must make up the 12 hours credit in electives.

## CHINESE

## CHINESE 1, 2. ELEMENTARY CHINESE. (3,3)

Elements of pronunciation, simple ideograms, colloquial conversation, translation.

## CHINESE 6, 7. INTERMEDIATE CHINESE. (3,3)

Prerequisite, Chinese 2 or equivalent. Reading of texts designed to give some knowledge of Chinese life, thought and culture.

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\* A student's "native language" is the one he first learned to read and write as a child *through regular schooling*. It is not necessarily, therefore, the language of his parents or that of the country in which he was born.

## CHINESE, FRENCH, GERMAN, RUSSIAN, SPANISH

### *For Advanced Undergraduates and Graduates*

#### CHINESE 171, 172. CHINESE CIVILIZATION. (3,3)\*\*

This course supplements Geog. 134 and 135, *Cultural Geography of East Asia*. It deals with Chinese literature, art, folklore, history, government, and great men. Second semester: developments in China since 1911. The course is given in English translation.

## FRENCH

#### FRENCH 1, 2. ELEMENTARY FRENCH. (3,3)

Study of linguistic structure and development of audio-lingual and writing ability.

#### FRENCH 6, 7. INTERMEDIATE FRENCH. (3,3)

Prerequisite, French 2 or equivalent. Study of linguistic structure, further development of audio-lingual and writing ability, and reading of literary texts with discussion in French.

## GERMAN

#### GERMAN 1, 2. ELEMENTARY GERMAN. (3,3)

Study of linguistic structure. Extensive drill in pronunciation and conversation.

#### GERMAN 6, 7. INTERMEDIATE LITERARY GERMAN. (3,3)

Prerequisite, German 2 or equivalent. Study of linguistic structure, reading of literary texts with discussion in German.

## RUSSIAN

#### RUSSIAN 1, 2. ELEMENTARY RUSSIAN. (3,3)

Elements of grammar, pronunciation and conversation; exercises in translation.

#### RUSSIAN 6, 7. INTERMEDIATE RUSSIAN. (3,3)

Prerequisite, Russian 2 or equivalent. Reading of texts designed to give some knowledge of Russian life, thought and culture.

## SPANISH

#### SPANISH 1, 2. ELEMENTARY SPANISH. (3,3)

Study of linguistic structure and development of audio-lingual and writing ability.

\*\* Language courses in the 171, 172, series may be considered as history credit in meeting the requirements of the secondary area of concentration in the General Studies Curriculum. They may also be used as elective credit in all curricula of University College.

**SPANISH 6, 7. INTERMEDIATE SPANISH. (3,3)**

Prerequisite, Spanish 2 or equivalent. Study of linguistic structure, further development of audio-lingual and writing ability, and reading of literary texts with discussion in Spanish.

## MATHEMATICS

In general students should enroll in only one of the course sequences, Math. 10-11, 18-19. In case this rule is not followed, proper assignment of credit will be made upon application to the Department of Mathematics. The following are listed as typical situations:

Math. 10, 18. Credit in only one course, the one enrolled in latest.

Math. 11, 18. Math. 11—2 credits Math. 18—5 credits.

**MATH. 10. ALGEBRA. (3)**

Prerequisite, one unit each of algebra and plane geometry. Open to biological, premedical, pre dental, University College, and general Arts and Sciences students. Note regulation above, in case student enrolls in more than one of the courses, Math. 10, 18. Fundamental operations, factoring, fractions, linear equations, exponents and radicals, quadratic equations, progressions, logarithms, permutations and combinations, probability and mathematics of investment.

**MATH. 11. TRIGONOMETRY AND ANALYTIC GEOMETRY. (3)**

Prerequisite, Math. 10, or equivalent. Open to biological, premedical, pre dental, University College and general Arts and Sciences students. This course is not recommended for students planning to enroll in Math. 20. Note regulation above, in case student enrolls in more than one sequence, Math. 10-11, 18-19. Trigonometric functions, identities, addition formulas, solution of triangles, coordinates, locus problems, the straight line and circle, conic sections, and graphs.

**MATH. 18, 19. ELEMENTARY MATHEMATICAL ANALYSIS. (5,5)**

Prerequisites, high school algebra completed and plane geometry. Open to students in the sciences, engineering, education. Note regulation above, in case student enrolls in more than one of the course sequences, Math. 10-11, 18-19. The elementary mathematical functions, composed of algebraic, exponential, trigonometric types and their inverses, are studied by means of their properties, their graphical representations, the identities interconnecting them, the solution of equations involving them. The beginning techniques of calculus and a full discussion of solid analytic geometry are included. Other material may be selected from such topics as permutations, combinations, probability, statistics, determinants, vectors, and matrices.

**MATH. 20, 21. CALCULUS. (4,4)**

Three lectures and two one-hour drill periods a week. Prerequisite, Math. 19 or equivalent. Open to students in engineering, education, and the physical sciences. Limits, derivatives, differentials, maxima and minima, curve sketching, rates, curvature, kinematics, integration with geometric and physical applications, partial derivatives, space geometry, multiple integrals, infinite series.

## MATHEMATICS

### MATH. 64. DIFFERENTIAL EQUATIONS FOR ENGINEERS. (3)

Prerequisite Math 21 or equivalent. Required of students in mechanical and electrical engineering. Differential equations of the first and second order with emphasis on their engineering applications.

### *For Advanced Undergraduates and Graduates*

### MATH. 100. VECTORS AND MATRICES. (3)

Prerequisite, Math. 21 or equivalent. The algebra of vector spaces and matrices, with emphasis upon those aspects of interest to students in applied mathematics.

### MATH. 103, 104. INTRODUCTION TO MODERN ALGEBRA. (3,3)

Prerequisite, Math. 21 or equivalent. For Math. 104, the usual prerequisite of Math. 103 may be waived upon consent of instructor. In Math. 103 are studied the basic concepts of abstract algebra: integral domains, divisibility, congruences; fields, ordered fields; the fields of rational numbers, of real numbers, of complex numbers; polynomial domains over a field, including classical results on the theory of polynomial equations with rational, real, or complex coefficients; unique factorization domains, irreducibility criteria; rings. In Math. 104 are studied groups, vector spaces, linear transformation, matrices.

### MATH. 110, 111. ADVANCED CALCULUS. (4,4)

Prerequisite, Math. 21, or equivalent. Limits and continuity of real and complex functions, Riemann integration, partial differentiation, line and surface integrals, infinite series, elements of vector analysis and of complex variable theory. Emphasis on problems and techniques.

### MATH. 114. DIFFERENTIAL EQUATIONS. (3)

Prerequisite, Math. 110 or equivalent. Ordinary differential equations, symbolic methods, successive approximations, solutions in series, orthogonal functions, Bessel functions, Sturmian theory.

### MATH. 115. PARTIAL DIFFERENTIAL EQUATIONS. (3)

Prerequisite, Math. 114. Partial differential equations of first and second order, characteristics, boundary value problems, systems of equations, applications.

### MATH. 116. INTRODUCTION TO COMPLEX VARIABLE THEORY. (3)

Prerequisite, Math. 21 or equivalent. Not open to students who have passed Math. 164. Graduate students in mathematics should enroll in Math. 286. Fundamental operations in complex numbers, differentiation and integration, sequence and series, power series, analytic functions, conformal mapping, residue theory, special functions.

### MATH. 126, 127. INTRODUCTION TO DIFFERENTIAL GEOMETRY AND TENSOR ANALYSIS. (3,3)

Prerequisite, Math. 21 or equivalent. The differential geometry of curves and surfaces with the use of vector and tensor methods, curvature and torsion, moving frames, curvilinear coordinates, the fundamental differential forms, covariant derivatives, intrinsic geometry, curves on a surface, applications to problems in dynamics, mechanics, electricity and relativity.

### MATH. 130. PROBABILITY. (3)

Prerequisite, Math. 21 or equivalent. Combinatory analysis, total, compound



and inverse probability, continuous distributions, theorems of Bernoulli and Laplace, theory of errors.

**MATH. 132. MATHEMATICAL STATISTICS. (3)**

Prerequisite, Math. 21 or equivalent. Frequency distributions and their parameters, multivariate analysis and correlation, theory of sampling, analysis of variance, statistical inference.

**MATH. 162. APPLIED MATHEMATICS I. (3)**

Prerequisite, Math. 21 or consent of instructor. Calculus of functions of several real variables; limits, continuity, partial differentiation, multiple integrals, line and surface integrals. Vector valued functions. Curvilinear coordinates. Theorems of Green, Gauss and Stokes. Physical applications. (Not open to students with credit for Math. 152).

**MATH. 163. APPLIED MATHEMATICS II. (3)**

Prerequisite, Math. 162 or 152 or consent of instructor. The complex field. Infinite processes for real and complex numbers. Calculus of complex functions. Analytic functions and analytic continuation. Theory of residues and application to evaluation of integrals. Conformal mapping. (Not open to students with credit for Math. 116 or 154).

**MATH. 164. APPLIED MATHEMATICS III. (3)**

Prerequisite, Math. 64 and 163 or 154 or consent of instructor. Fourier and Laplace transforms. Evaluation of the complex inversion integral by the theory of residues. Applications to systems of ordinary and partial differential equations. (Not open to students with credit for Math. 153).

**MATH. 181. FOUNDATIONS OF NUMBER THEORY. (3)**

Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences. Axiomatic developments of the real numbers. Elementary number theory.

**MATH. 182. FOUNDATIONS OF ALGEBRA. (3)**

Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences. Modern ideas in algebra and topics in the theory of equations.

**MATH. 183. FOUNDATIONS OF GEOMETRY. (3)**

Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences. A study of the axioms for Euclidean and non-Euclidean geometry.

**MATH. 184. FOUNDATIONS OF ANALYSIS. (3)**

Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences. A study of the limit concept and the calculus. (Previous knowledge of calculus is not required.)

## MICROBIOLOGY

### MICROB. 1. GENERAL MICROBIOLOGY. (4)

Two lecture and two two-hour laboratory periods a week. The physiology, culture and differentiation of microorganisms. Fundamental principles of microbiology in relation to man and his environment. Laboratory fee, \$15.00.

*For Advanced Undergraduates and Graduates*

### MICROB. 101. PATHOGENIC MICROBIOLOGY. (4)

Two lectures and two laboratory periods a week. Prerequisite, Microb. 1. The role of microorganisms in the diseases of man and animals with emphasis upon the differentiation and culture of microorganisms, types of diseases, modes of disease transmission; prophylactic, therapeutic and epidemiological aspects. Laboratory fee, \$15.00.

## MILITARY STUDIES

*For Advanced Undergraduates and Graduates*

### M. S. 147, 148. MILITARY HISTORY. (3,3)

A study of the evolution of the art of war to include the following:

- (1) the impact of technological advances on the conduct of war;
- (2) the development of the principles of strategy and higher tactics;
- (3) the interrelationship of land, sea, and air power and the organization and functioning of high commands in combined operations;
- (4) the attributes of the great military leaders and their contribution to the advancement of the art of war

M. S. 147, up to World War I; M. S. 148, World Wars I and II and the Korean Conflict.

### M. S. 149. MILITARY LAW. (3)

A study of the basic principles of elementary law, including aspects of torts, property, commercial law, and judicial systems; the aspects of constitutional law affecting military government and the exercise of military power; the law of evidence applied in civil, criminal, and military trials; a survey of the substantive criminal law.

### M. S. 151. MILITARY LOGISTICS. (3)

A study of logistics, including (a) the principles governing the national economic activities and resources necessary to support the Armed Forces; (b) a study of the logistical systems of the Army, Navy, and Air Force.

### M. S. 153. MILITARY POLICY OF THE UNITED STATES. (3)

A study of American military policy from the period of the Revolutionary War to the present.

## MUSIC

### MUSIC 7, 8. THEORY OF MUSIC. (3,3)

Two lectures and three laboratory hours per week. A fundamental course in the elements of music. Study of rhythms, scales, chord structures, and tonalities

through ear training, sight singing, and keyboard drill. The student must achieve a grade of "C" in Music 8 in order to register for Music 70.

**MUSIC 16. FUNDAMENTALS FOR THE CLASSROOM TEACHER. (3)**

Open to students majoring in Elementary Education or Childhood Education; other students take Music 7. Music 7 and 16 may not both be counted for credit. The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning.

**MUSIC 20. SURVEY OF MUSIC LITERATURE. (3)**

Open to all students except music and music education majors. Music 1 and 20 may not both be taken for credit. A study of the principles upon which music is based, and an introduction to the musical repertoires performed in America today.

## SCHOOL OF NURSING

### PROGRAM FOR REGISTERED NURSES

**NURS. 153. PUBLIC HEALTH. (2)**

First and second semester, senior year. A knowledge and understanding of public health; its history and functions in the community and in the world in general.

**NURS. 154. PRINCIPLES OF MANAGEMENT IN A NURSING UNIT. (2)**

Second semester, senior year. Elementary principles of administration; and the interrelationships of the various departments of health agencies. It deals with the position of the supervisor, staff nurse and other members of the nursing team. Methods of supervision and evaluation of clinical work are included.

**NURS. 156. PUBLIC HEALTH NURSING. (5)**

First and second semesters, senior year. This course is designed to assist the students in the application of knowledge, understanding, and appreciation of the principles and scope of public health nursing and to prepare them to carry out staff nursing activities in an organized public health nursing agency.

**NURS. 158. BIO-STATISTICS. (3)**

First and second semester, senior year. Purpose is to orient the student in the proper interpretation of observational data, and to evaluate quantitative aspects of medical literature.

**NURS. 159. CLINICAL PRACTICUM. (2)**

This course is designed to assist the registered professional nurse in applying her knowledge, understanding and skills in the care of selected patients with complex nursing problems.

**NURS. 189. ELECTIVES WORKSHOPS AND INSTITUTES. (1-6)**

Participation in Workshops and Institutes in various aspects of nursing such as Cardio-Vascular Nursing, Nursing Administration and Clinical Teaching, Rehabilitative Nursing and others.

**NURS. 199. PRO-SEMINAR. (2)**

This course is designed to provide knowledge and understanding of current trends in nursing.

## PHILOSOPHY

## PHILOSOPHY

Students may not enroll in Phil. 1 and later take Phil. 123, 124; Students may not enroll in Phil. 123, 124 and later take Phil. 1.

### PHIL. 1. PHILOSOPHY FOR MODERN MAN. (3)

An introduction to some of the main problems of philosophy, and to some of the main ways of dealing with these problems.

### PHIL. 41. ELEMENTARY LOGIC AND SEMANTICS. (3)

An introductory study of logic and language, intended to help the student increase his ability to employ language with understanding and to reason correctly. Topics treated include: the uses and abuses of language, techniques for making sound inferences, and the logic of science.

### PHIL. 45. ETHICS. (3)

An introduction to moral philosophy, including a critical examination of some important classic and contemporary systems of ethics, such as those of Aristotle, Kant, Mill, and Dewey.

### PHIL. 53. PHILOSOPHY OF RELIGION. (3)

This course seeks to provide the student with the means by which he may approach intelligently the main problems of religious thought: the nature of religious experience, the forms of religious expression, the conflicting claims of religion and science, and the place of religion in the community and in the life of the individual.

### *For Advanced Undergraduates and Graduates*

### PHIL. 101. ANCIENT PHILOSOPHY. (3)

A history of Greek thought from its beginnings to the time of Justinian. The chief figures discussed: the Presocratic philosophers, Socrates, Plato, Aristotle, Epicurus, the Stoic philosophers and Plotinus.

### PHIL. 102. MODERN PHILOSOPHY. (3)

A history of philosophical thought in the West during the 16th, 17th, and 18th centuries. The chief figures discussed: Bacon, Galileo, Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume and Kant.

### PHIL. 104. TWENTIETH CENTURY PHILOSOPHY. (3)

A survey of philosophy in the twentieth century, through a consideration of representative figures in England, Europe, and America. Among the theories to be studied are logical atomism (Russell, Wittgenstein), positivism (Carnap, Ayer), existentialism and phenomenology (Sartre, Husserl), naturalism and realism (Dewey, Santayana).

### PHIL. 105. AMERICAN PHILOSOPHY. (3)

A survey of American philosophical thought from the 18th century to the present. Special attention is given to Edwards, Jefferson, Emerson, Royce, Peirce, James and Dewey.

### PHIL. 120. ORIENTAL PHILOSOPHY. (3)

A brief summary of Indian and Chinese philosophy. Discussion of Indian thought will center about the Rig-Veda, the Upanishads, the Buddhist Philosophers and the chief Hindu systems. Discussion of Chinese thought will center about Confucius, Laotse and their disciples, particular attention being given to the development of democratic ideals from Mencius to Sun Yat-sen.



## PHILOSOPHY, PHYSICAL EDUCATION

### PHIL. 123, 124. PHILOSOPHIES MEN LIVE BY. (3,3)

An exploration of the fundamental beliefs which determine what men make of their lives and of the world they live in. Each semester classic statements of these beliefs by great philosophers will be chosen for class discussion on the basis of their significance for the problems confronting modern man. Phil. 123 is not a prerequisite to Phil. 124.

### PHIL. 130. THE CONFLICT OF IDEALS IN WESTERN CIVILIZATION. (3)

A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the United States and Russia.

### PHIL. 145. ETHICAL THEORY. (3)

Prerequisite, Philosophy 1 or 45. Contemporary problems having to do with the meanings of the principal concepts of ethics and with the nature of moral reasoning.

### PHIL. 154. POLITICAL AND SOCIAL PHILOSOPHY. (3)

A systematic treatment of the main philosophical issues encountered in the analysis and evaluation of social (especially political) institutions.

### PHIL. 156. PHILOSOPHY OF SCIENCE. (3)

An inquiry into the relations of the sciences, the nature of observation, hypotheses, verification, experiment, measurement, scientific laws and theories, the basic concepts and presuppositions of science, and the relations of science to society.

### PHIL. 164. CONTEMPORARY MOVEMENTS IN PHILOSOPHY. (3)

A survey of recent and present developments in philosophy. Attention will be given to such thinkers as James, Bergson, Russell, Dewey, and Whitehead and to such movements as Pragmatism, Idealism, Naturalism, Positivism, and Existentialism. Particular consideration will be paid to the bearing of these developments on contemporary problems of science, religion and society.

## PHYSICAL EDUCATION

### *For Advanced Undergraduates and Graduates*

### \*P. E. 120. PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL. (3)

This course is designed to orient the general elementary school classroom teacher to physical education. Principles and practices in elementary school physical education are presented and discussed, and a large variety of appropriate activities are considered and demonstrated from a standpoint of their use and application at the various grade levels.

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\* Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

## PHYSICAL EDUCATION

### \*P. E. 160. THEORY OF EXERCISE. (3)

Two lectures and one laboratory hour a week. Prerequisite, Zool. 1, 14, and 15, and P. E. 100 or equivalent. A study of exercise and its physiological and kinestiological bases. Special emphasis is placed upon the application of exercise to the development and maintenance of physical efficiency. Corrective therapy, conditioning for athletics, the effects of exercise and training on the human organism, fatigue, staleness, relaxation, and the nature of athletic injuries are investigated.

### \*P. E. 180. MEASUREMENT IN PHYSICAL EDUCATION AND HEALTH. (3)

Two lectures and two laboratory periods a week. Prerequisite, placement in Group 1 or 2 on Mathematics Entrance test or Math. 0. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of the functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

### \*P. E. 190. ADMINISTRATION AND SUPERVISION OF PHYSICAL EDUCATION, RECREATION AND HEALTH. (3)

The application of the principles of administration and supervision to Physical Education, Recreation, and Health. This course must be taken during the semester in which the student is doing student teaching.

### \*P. E. 195. ORGANIZATION AND ADMINISTRATION OF ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)

Prerequisite, P. E. 120. This course considers the procedures which are basic to the satisfactory organization of all phases of the elementary school physical education program. Stress will be placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. Strong emphasis will be placed on organization and administration from a standpoint of adapting the program to specific situations.

### \*P. E. 196. QUANTITATIVE METHODS. (3)

A course covering the statistical techniques most frequently used in research pertaining to Physical Education, Recreation, and Health Education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

*For Graduates (offered through University College only on  
Baltimore Campus)*

### P. E. 201. FOUNDATIONS IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

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\* Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

**P. E. 203. SUPERVISORY TECHNIQUES IN PHYSICAL EDUCATION, RECREATION AND HEALTH. (3)**

A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

**P. E. 205. ANALYSIS OF CONTEMPORARY ATHLETICS. (3)**

A study of current problems, practices, and national issues of permanent importance to the conduct of athletic competition in a democracy.

**P. E. 210. METHODS AND TECHNIQUES OF RESEARCH. (3)**

A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

**P. E. 215. PRINCIPLES AND TECHNIQUES OF EVALUATION. (3)**

Prerequisite, an introductory course in measurement or permission of the instructor. A study of currently used means of evaluating the performance of students and the effectiveness of programs of physical education in schools and colleges. Specific problems concerning evaluation, brought in by members of the class, will be analyzed.

**P. E. 230. SOURCE MATERIAL SURVEY. (3)**

A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

**P. E. 250. MENTAL AND EMOTIONAL ASPECTS OF SPORTS AND RECREATION. (3)**

Prerequisites, psychology and/or human development. An exploration of psychological aspects of physical education, sports and recreation, including personality dynamics in relation to exercise and sports, psychological factors in athletic performance and coaching, and applications of principles of motor learning.

**P. E. 280. SCIENTIFIC BASES OF EXERCISE. (3)**

Prerequisites, Anatomy, Physiology, P. E. 100, 160, or equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

**P. E. 290. ADMINISTRATIVE DIRECTION OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

**P. E. 291. CURRICULUM CONSTRUCTION IN PHYSICAL EDUCATION AND HEALTH. (3)**

A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.



## PSYCHOLOGY

## PSYCHOLOGY

### PSYCH. 1. INTRODUCTION TO PSYCHOLOGY. (3)

A basic introductory course, intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution.

### PSYCH. 5. PERSONALITY AND ADJUSTMENT. (3)

Prerequisite, Psych. 1. Introduces the student to the psychology of human personality and adjustment with a view toward increasing self-understanding and developing an appreciation of the mental health movement and each individual's stake in it.

### PSYCH. 21. SOCIAL PSYCHOLOGY. (3)

Prerequisite, Psych. 1. Personality and behavior as influenced by culture and interpersonal relations. Social influences on motivation, learning, memory, and perception. Attitudes, public opinion, propaganda, language and communication, leadership, ethnic differences, and group processes.

### PSYCH. 25. CHILD PSYCHOLOGY. (3)

Prerequisite, Psych. 1. Behavioral analysis of normal development and normal socialization of the growing child. Leading theories of child nature and care, and their implications.

### *For Advanced Undergraduates and Graduates*

### PSYCH. 110. EDUCATIONAL PSYCHOLOGY. (3)

Prerequisite, Psych. 1. Researches on fundamental psychological problems encountered in education. Measurement and significance of individual differences, learning, motivation, transfer of training, and the educational implications of theories of intelligence.

### PSYCH. 131. ABNORMAL PSYCHOLOGY. (3)

Prerequisites, Psych. 1 and 5. The nature, diagnosis, etiology, and treatment of mental disorders.

### PSYCH. 148. PSYCHOLOGY OF LEARNING. (3)

Prerequisite, 6 hours in psychology. Review and analysis of the major phenomena and theories of human and animal learning, including an introduction to the fields of problem solving, thinking and reasoning behavior.

### PSYCH. 151. PSYCHOLOGY OF INDIVIDUAL DIFFERENCES. (3)

Prerequisite, 6 hours in psychology. Problems, theories, and researches related to psychological differences among individuals and groups.

### PSYCH. 161. INDUSTRIAL PSYCHOLOGY. (3)

Prerequisite, 6 hours in psychology. A course designed to aid in the understanding of the problems of people in a variety of work situations; serving as an introduction to such technical problems as personnel selection, interviewing, morale supervision and management, and human relations in industry. Lecture, discussion and laboratory.



## RECREATION

*For Advanced Undergraduates and Graduates\****\*REC. 120. PROGRAM PLANNING. (3)**

Prerequisite, Rec. 30 or 170. Study of the various aspects, problems and practices of family, agency and governmental recreation programs and their planning, with particular emphasis on playground-community and teen-age center plans and procedures. This course should be of interest and value to those students planning to do part-time summer playground work.

**\*REC. 150. CAMP MANAGEMENT. (3)**

An advanced camping course for those students with previous training and experience; organization, administration, programming, current trends, evaluation, and special problems. Whenever possible, visiting specialists and field trips will be included.

**\*REC. 180. LEADERSHIP TECHNIQUES AND PRACTICES. (3)**

A study of the various kinds of levels of leadership exerted by professional and semiprofessional workers, some of the difficulties and probable weaknesses to be met, and some of the tangible techniques to be used in personnel, staff, and public relationships; handling of problem children, of personnel, of public relations campaigns, committee gatherings, etc. The group work approach will be emphasized and used, insofar as possible, in the solution of particular problems that grow out of practical experiences in handling on and off campus groups.

**\*REC. 190. ORGANIZATION AND ADMINISTRATION OF RECREATION. (3)**

A study of the organizational patterns and administrative problems involved in the various kinds of operating recreation groups and agencies; forms of organization; finance and budgets; personnel; areas, facilities, and equipment; public relations.

*For Graduates (offered through University College only on  
Baltimore Campus)*

**REC. 201. FOUNDATIONS OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

A study of history, philosophy and principles of Physical Education, Recreation and Health as applied to current problems in each area and as related to general education.

**REC. 203. SUPERVISORY TECHNIQUES IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**

A study of current concepts, principles and techniques of supervision and their application to the special fields indicated: observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

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\* Note: Starred courses may be taken for graduate credit with permission of the advisor. Students taking 100 level courses will be expected to carry out a special project.

## RECREATION, SOCIOLOGY

### REC. 204. MODERN TRENDS IN RECREATION. (3)

A study of emphasis and recent developments in the recreation field as a whole and within its various specialized areas, making particular reference to the current and new literature.

### REC. 210. METHODS AND TECHNIQUES OF RESEARCH. (3)

A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

### REC. 230. SOURCE MATERIAL SURVEY. (3)

A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

### REC. 290. ADMINISTRATIVE DIRECTION OF PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)

This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

## SOCIOLOGY

Sociology 1 or its sociology equivalent is prerequisite to all other courses in sociology excepting Soc. 105.

### SOC. 1. SOCIOLOGY OF AMERICAN LIFE. (3)

Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization.

### SOC. 2. PRINCIPLES OF SOCIOLOGY. (3)

The basic forms of human association and interaction; social processes; institutions; culture, human nature and personality.

### SOC. 52. CRIMINOLOGY. (3)

Criminal behavior and the methods of its study; causation; topologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime.

### *For Advanced Undergraduates and Graduates*

### SOC. 105. CULTURAL ANTHROPOLOGY. (3)

A survey of the simpler cultures of the world, with attention to historical processes and the application of anthropological theory to the modern situation.

### SOC. 112. RURAL-URBAN RELATIONS. (3)

The ecology of population and the forces making for change in rural and urban life; migration, decentralization and the regionalism as methods of studying individual and national issues. Applied field problems.

### SOC. 114. THE CITY. (3)

The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control, and planning.

**Soc. 115. INDUSTRIAL SOCIOLOGY. (3)**

The sociology of human relations in American industry and business. Complex industrial and business organizations as social systems. Social relationships within and between industry, business, community and society.

**Soc. 116. MILITARY SOCIOLOGY. (3)**

The sociology of military life. Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military Service as an occupation or profession. Relations between military institutions, civilian communities and society.

**Soc. 118. COMMUNITY ORGANIZATION. (3)**

Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects.

**Soc. 121. POPULATION. (3)**

Population distribution and growth in the United States and the world; population characteristics of the United States; resulting population problems and policies.

**Soc. 123. ETHNIC MINORITIES. (3)**

Basic social processes in the relations of ethnic groups within the State; immigration groups and the Negro in the United States; ethnic minorities in Europe.

**Soc. 131. INTRODUCTION TO SOCIAL SERVICE. (3)**

General survey of the field of social-welfare activities; historical development; growth, functions, and specialization of agencies and services, private and public.

**Soc. 141. SOCIOLOGY OF PERSONALITY. (3)**

Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior.

**Soc. 144. COLLECTIVE BEHAVIOR. (3)**

Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public.

**Soc. 145. SOCIAL CONTROL. (3)**

Forms, mechanisms, and techniques of group influence on human behavior; problems of social control in contemporary society.

**Soc. 153. JUVENILE DELINQUENCY. (3)**

Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention.

**Soc. 154. CRIME AND DELINQUENCY PREVENTION. (3)**

Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. Methods and programs in prevention of crime and delinquency.

**Soc. 164. THE FAMILY AND SOCIETY. (3)**

Study of the family as a social institution; its biological and cultural foundations, historic development, changing structure and function; the interactions of marriage and parenthood, disorganizing and reorganizing factors in present-day trends.

**Soc. 166. INTERVIEWING AND PROBLEM SOLVING IN SOCIAL WORK. (3)**

Prerequisite, Soc. 131. (may be taken concurrently). The principles of interviewing and other diagnostic techniques as applied to social problems with particular reference to family and child behavior.

## SOCIOLOGY, SPEECH AND DRAMATIC ART

### SOC. 171. FAMILY AND CHILD WELFARE. (3)

Programs of family and child welfare agencies; social services to families and children; child placement; foster families.

### SOC. 183. SOCIAL STATISTICS. (3)

Prerequisite, Math. 3 or 10. Measures of central tendency and dispersion, use of statistical inference in simple testing of null hypotheses, chi square, and labor saving computational devices for correlation.

### SOC. 186. SOCIOLOGICAL THEORY. (3)

Development of the science of sociology; historical backgrounds; recent theories of society.

## SPEECH AND DRAMATIC ART

### SPEECH 1. PUBLIC SPEAKING. (3)

The preparation and delivery of short original speeches; outside readings; reports, etc.

### *For Advanced Undergraduates and Graduates*

### SPEECH 105. SPEECH-HANDICAPPED SCHOOL CHILDREN. (3)

Admission by consent of instructor. The occurrence, identification and treatment of speech handicaps in the classroom. An introduction to speech pathology.

### SPEECH 109. SPEECH AND LANGUAGE DEVELOPMENT OF CHILDREN. (3)

An analysis of normal and abnormal processes of speech and language development in children.

### SPEECH 112. PHONETICS. (3)

Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice in transcription. Mastery of the international phonetic alphabet. Laboratory fee, \$3.00.

### SPEECH 120. SPEECH PATHOLOGY. (3)

Prerequisite, Speech 105. A continuation of Speech 105, with emphasis on the causes and treatment of organic speech disorders. Laboratory fee, \$3.00.

### SPEECH 126. SEMANTIC ASPECTS OF SPEECH IN HUMAN RELATIONS. (3)

An analysis of speech and language habits from the standpoint of general semantics.

### SPEECH 133. COMMUNICATION PROCESSES IN CONFERENCES. (3)

Prerequisite, Speech 1. Limited to students at the off-campus centers. Group participation in conferences, methods of problem solving, semantic aspects of language and the function of conferences in industry and government.

### SPEECH 136. PRINCIPLES OF SPEECH THERAPY. (3)

Prerequisite, Speech 120. Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. Laboratory fee, \$3.00.



## ZOOLOGY

**ZOOL. 1. GENERAL ZOOLOGY. (4)**

Two lectures and two two-hour laboratory periods a week. This course, which is cultural and practical in its aim, deals with the basic principles of animal life. Special emphasis is placed on the functions and systems of the human body as well as basic biological phenomena, such as cell division, reproduction, and inheritance.

**ZOOL. 55. DEVELOPMENT OF THE HUMAN BODY. (2)**

Two lectures a week. A study of the main factors affecting the growth and development of the child with special emphasis on normal development.





# THE FACULTY

## INSTRUCTIONAL STAFF, ALL CENTERS

ABRAMS, Julian, Lecturer in Psychology

B.S., City College of New York, 1935; M.S., 1935; M. Litt., University of Pittsburgh, 1948; Ph.D., New York University, 1957.

AHNERT, Frank O., Assistant Professor of Geography

Ph.D., University of Heidelberg, 1953.

AHRENDT, Myrl, Lecturer in Mathematics

B.A., Friends University, 1929; M.A., University of Wichita, 1932.

AITKEN, Alfred H., Lecturer in Physics

B.A., Lehigh University, 1949; M.S., Indiana University, 1950; Ph.D., 1955.

ALDRIDGE, Alfred O., Professor of English

B.S., Indiana University, 1937; M.A., University of Georgia, 1938; Ph.D., Duke University, 1942; Docteur L'Universite De Paris, 1956.

ALEXANDER, Herbert, Lecturer in Psychology

A.B., Brown University, 1952; M.A., Columbia University, 1953.

ALFORD, Albert L., Lecturer in Government and Politics

A.B., University of Akron, 1948; A.M., Princeton University, 1951; Ph.D., 1953.

ALPERIN, Robert J., Instructor in Government and Politics

B.A., University of Chicago, 1950; M.A., 1952; Ph.D., Northwestern University, 1959.

ALTER, Jean V., Associate Professor of Foreign Languages

Ph.D., University of Paris, 1951; University of Chicago, 1958.

ANDERSON, Charles R., Instructor in Office Management and Techniques

B.S., University of Maryland, 1957; M.Ed., 1959.

ANDERSON, Frank G., Associate Professor of Sociology

A.B., Cornell University, 1941; Ph.D., University of New Mexico, 1951.

ANDERSON, Henry A., Assistant Professor of Business Administration

B.A., University of London, 1939; M.B.A., Columbia University, 1948; Ph.D., 1959.

ANDERSON, J. Paul, Assistant Professor of Education

B.S., University of Minnesota, 1942; M.A., 1947; Ph.D., 1960.

ANDERSON, Jeremy H., Assistant Professor of Geography

B.A., Yale University, 1956; M.A., University of Washington, 1959.

## FACULTY

- ANDERSON, Nancy S., Associate Professor of Psychology  
B.A., University of Colorado, 1952; M.A., Ohio State University, 1953;  
Ph.D., 1956.
- ANDERSON, Thornton H., Associate Professor of Government and Politics  
A.B., University of Kentucky, 1937; M.A., 1938; Ph.D., University of Wisconsin, 1948.
- ANDREWS, Mary L., Assistant Professor of English  
B.S., New York University, 1929; M.A., 1935; Ph.D., 1941.
- AOKI, Hideo, Lecturer in Education (Far East)  
A.B., Kletzing College, 1945; M.A., Drake University, 1955; Ph.D., Stanford University, 1957.
- ARNOLD, Edward J., Lecturer in Industrial Education  
B.S., University of Maryland, 1933; M.A., Columbia University, 1948.
- ASHLEY, Lewis J., Lecturer in Military Studies  
B.S., Syracuse University, 1959; M.B.A., 1959.
- ASHMEN, Roy, Assistant Professor of Business Administration  
B.S., Drexel Institute of Technology, 1935; M.S., Columbia University, 1936;  
Ph.D., Northwestern University, 1950.
- AUSTIN, Edgar A., Lecturer in English (Far East)  
B.A., University of California, 1950; M.A., 1956; Ph.D., 1959.
- AYLWARD, Thomas J., Associate Professor of Speech  
B.S., University of Wisconsin, 1947; M.S., 1949; Ph.D., 1960.
- BACON, Eugene H., Lecturer in History  
A.B., Loyola College, 1947; M.A., Georgetown University, 1949; Ph.D., 1951.
- BAILEY, William M., Instructor in Economics  
B.A., North Texas University, 1959.
- BAIRD, J. Douglas, Assistant Professor of English  
B.A., University of British Columbia, 1924; S.A., 1925; Ph.D., University of Washington, 1952.
- BAKER, John, Lecturer in Military Studies  
B.S., United States Military Academy, 1942; LL.B., Yale Law School, 1951.
- BAKER, John M., Lecturer in English (Far East)  
A.B., Knox College, 1917; A.M., 1919; B.Litt., Columbia, 1921; A.M., Harvard University, 1926; Ph.D., 1930.



- BAKSHI, Jagjit S.**, Assistant Instructor in Mathematics  
Baccalaureate A.S., College Khanna, 1952; M.A., Government College Ludhvari, 1955.
- BARBER, Willard F.**, Lecturer in Government and Politics  
B.A., Stanford University, 1928; M.A., 1929.
- BARNES, Henry F.**, Lecturer in Nursing  
M.D., Duke Medical School, 1950; M.P.H., University of North Carolina, 1959.
- BARNES, Jack C.**, Associate Professor of English  
A.B., Duke University, 1939; M.A., 1947; Ph.D., University of Maryland, 1954.
- BARTLETT, Claude J.**, Assistant Professor of Psychology  
B.S., Denison University, 1954; M.A., Ohio State University, Ph.D., 1958.
- BASS, John L.**, Instructor in Business Administration  
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B.S., University of Washington, 1951.
- BATKA, George F.**, Associate Professor of Speech  
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- BAUER, Richard H.**, Lecturer in History  
Ph.B., University of Chicago, 1924; M.A., 1928; Ph.D., 1935.
- BEACH, Edward S.**, Lecturer in Education  
B.S., University of Maryland, 1951; M.Ed., 1957.
- BEALL, Otho T., Jr.**, Assistant Professor of English  
B.A., Williams College, 1930; M.A., University of Minnesota, 1933; Ph.D., University of Pennsylvania, 1953.
- BEALS, L. Alan**, Lecturer in Government and Politics  
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B.S., Muhlenberg College, 1951; M.S., George Washington University, 1957.
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Staatsexamen, Berlin Teachers Seminary, 1945.
- BENNETT, Lawrence H., Lecturer in Physics  
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- DASTON, Paul G., Associate Professor of Psychology**  
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- DAVIS, Alexander S., Lecturer in Mathematics**  
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- DAYTON, Chauncey M., Instructor in Education**  
B.A., University of Chicago, 1955.
- DEHAVEN, Anna Lee, Assistant Professor of Nursing**  
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B.A., Columbia University, 1950; M.A., University of California, 1951; M.S., Columbia University, 1952.
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- O'DONNELL, Maurice E., Assistant Professor of Government and Politics  
B.S., Eastern Illinois State College, 1948; M.S., University of Wisconsin, 1951; Ph.D., 1954.
- OGDEN, John D., Lecturer in English (Europe)  
A.B., Cornell University, 1936; M.A., 1937; Ph.D., Yale University, 1942.
- OHMAN, Gunnar P., Lecturer in Electrical Engineering  
B.S., Illinois Institute of Technology, 1943; M.S., University of Maryland, 1948.



- OLANDER, James H., Lecturer in Speech (Europe)  
B.A., Lawrence College, 1952; M.A., University of Wisconsin, 1953.
- OLVER, Frank W. J., Lecturer in Mathematics  
B.Sc., M.Sc., D.Sc., University of London, 1945.
- O'NEILL, Leo W., Jr., Associate Professor of Education  
B.A., University of Chicago, 1938; M.A., University of Kansas City, 1952;  
Ed.D., University of Colorado, 1955.
- OREM, Patricia A., Instructor in Nursing of Children  
Diploma in Nursing, Union Memorial Hospital School of Nursing, R.N.,  
1950; B.S., Catholic University of America, 1940; M.Ed., University of  
Maryland, 1952.
- ORR, Charles Richard, Lecturer in Speech (Far East)  
A.B., Muskingum College, 1928; M.A., University of Michigan, 1938.
- ORR, David B., Lecturer in Education  
A.B., B.S.Ed., Wittenberg College, 1952; M.A., Columbia University, 1953;  
Ph.D., 1956.
- OSER, Hansjorg, Lecturer in Mathematics  
Diploma of Physics, University of Freiburg, 1954; Dr. of Math., 1957.
- PADGETT, G. Franklin, Lecturer in Mathematics  
B.S.Ed., Wilson Teachers College, 1937; M.Ed., University of Maryland,  
1956.
- PALMER, Melvin D., Instructor in English  
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- PANICO, Marie, Instructor in Foreign Languages  
B.A., Queens College, 1958; M.S., University of Maryland. 1960.
- PARADISE, Lois M., Lecturer in Childhood Education  
B.S., Texas State College for Women, 1949; M.S., Iowa State College, 1951.
- PARKER, Keith, Lecturer in History (Atlantic)  
B.A., Fairleigh Dickinson College, 1959; M.A., University of Maryland,  
1961.
- PARR, Wallace E., Lecturer in Mathematics  
B.S., Carnegie Institute of Technology, 1950.
- PARRISH, James M., Lecturer in Economics  
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## FACULTY

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PARSONS, Arthur M., Lecturer in Military Studies (Europe)

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PATERSON, Robert A., Assistant Professor of Botany

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PATRICK, Arthur S., Professor in Charge of Office Techniques and Management

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PAVEY, Stanley, Assistant Professor of Psychology

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PEAKE, Charles, Lecturer in Economics (Europe)

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PEARSE, Cabell A., Lecturer in Mathematics

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PECK, Bernard, Associate Professor of Education

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PEREGOY, Frederick C., Jr., Lecturer in Industrial Education

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PERGOLA, Jean F. J., Lecturer in Foreign Languages

Licence-es-lettres, Sorbonne University, 1931; Banking Diploma, Polytechnic (London), 1937.

PERKINS, Hugh V., Professor of Education

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## FACULTY

- PERUSSE, Roland I., Lecturer in Government and Politics  
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- PHILLIPPS, Eugene, Lecturer in Economics (Europe)  
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- PHILOON, Thurman E., Lecturer in History (Europe)  
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- PICKETT, Wilda D., Associate Professor of Physical Education  
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- PIERSON, Robert M., Lecturer in English  
B.A., De Pauw University, 1946; M.A., Duke University, 1948; Ph.D., 1951;  
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- PITNER, Monty B., Lecturer in Speech (Atlantic)  
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- PLISCHKE, Elmer, Professor and Head of Government and Politics  
Ph.B., Marquette University, 1937; M.A., American University, 1938; Ph.D., Clark University, 1943.
- PLISKOFF, Stanley S., Lecturer in Psychology  
A.B., New York University, 1951; M.A., 1953; Ph.D., 1956.
- POPE, George B. H., Lecturer in Military Studies  
Ph.B., Hamilton College, 1916.
- POPPE, Janus, Lecturer in Economics  
B.S., Nautical Academy, 1939; M.A., Georgetown University, 1947; Ph.D., 1948.
- PORTZ, John, Assistant Professor of English  
B.A., Duke University, 1937; M.A., Harvard University, 1942; Ph.D., 1958.
- POWELL, Allen R., Lecturer in Philosophy  
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- POWELL, Eugene S., Lecturer in Government and Politics (Europe)  
A.B., San Diego State College, 1948; M.A., University of California, 1951.
- PRANGE, Gordon W., Lecturer in History  
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## FACULTY

- PRESCOTT, Daniel A.**, Professor of Education  
B.S., Tufts College, 1920; M.Ed., Harvard University, 1922; Ed.D., 1923.
- PRICE, George E.**, Lecturer in Mathematics  
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- PRICE, Henry W.**, Associate Professor of Electrical Engineering  
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- PRICKETT, Fay B.**, Lecturer in Military Studies  
B.S., United States Military Academy, 1916.
- PRITCHARD, David H.**, Lecturer in Education  
B.S., New York State Teachers College, Buffalo, 1940; Ed.M., University of Rochester, 1949.
- PRITCHARD, Norris T.**, Lecturer in Economics  
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- PROCTOR, Charles M., Jr.**, Lecturer in Education  
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- PROVENSEN, Hester B.**, Assistant Professor of Speech  
LL.B., George Washington University, 1926; M.A., Emerson College, 1948.
- PUGLIESE, Rudolph E.**, Assistant Professor of Speech  
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- QUIGLEY, James R.**, Lecturer in History (Atlantic)  
B.A., Pennsylvania State University, 1955; M.A., 1958.
- RABIN, Herbert**, Lecturer in Physics  
B.S., University of Wisconsin, 1950; M.S., University of Illinois, 1951; Ph.D., University of Maryland, 1959.
- RADER, Charles P.**, Lecturer in Chemistry  
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- RAMSEY, John S.**, Instructor in English  
B.A., Calvin College, 1959.
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RENZ, Paul, Assistant Professor of Education

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REUSS, Frederick G., Lecturer in Economics

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## FACULTY

- ROBEL, Ronald R., Lecturer in History (Far East)  
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- ROBERTS, J. Claude, Lecturer in History (Europe)  
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- ROBINSON, Edward A., Lecturer in Economics  
B.A., St. Mary's Seminary and University, 1944; M.A., Catholic University of America, 1948; Ph.D., 1954.
- ROBSON, John L., Lecturer in Speech (Far East)  
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- RODGERS, Herbert E., Instructor in Speech  
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- RODRIGUEZ, Paul V., Instructor in Foreign Languages  
Maestro Nacional, Escuela Normal-Melilla, Spain, 1940.
- ROGAN, Alfred C., Lecturer in Industrial Education  
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- ROGERS, Evelyn G., Instructor in English  
B.A., Northwestern University, 1940; M.A., University of Massachusetts, 1956.
- ROGERS, James F., Lecturer in Education  
B.S., Sul Ross State College, 1947; M.A., 1947; Ph.D., University of Texas, 1952.
- ROLFE, Cecil J., Lecturer in Economics  
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- ROSCHWALB, Jerold, Lecturer in English  
B.A., Brooklyn College, 1956; M.A., Columbia University 1957.
- ROUFF, William, Lecturer in History  
B.S., University of Oregon, 1954; M.A., 1958.
- ROULSTON, Charles R., Instructor in English  
B.A., University of Maryland, 1954; M.A., Indiana University, 1957.
- ROWDYBUSH, Charles R., Lecturer in Military Studies  
B.S., Ohio State University, 1936; M.A., The American University, 1957.
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- RUNDELL, Walter, Jr., Lecturer in History**  
B.J., B.S., University of Texas, 1951; M.A., The American University, 1955;  
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B.S., Cornell University, 1943; M.S., Rutgers University, 1947; Ph.D., 1949.
- SALAMON, Frank, Lecturer in Education**  
B.S., Central Connecticut State College, 1950; M.Ed., University of Hartford,  
1956.
- SARGENT, Marion S., Lecturer in English (Far East)**  
B.A., Trinity University, 1930; M.A., University of Michigan, 1933; Ph.D.,  
University of Texas, 1946.
- SASLAW, Samuel S., Lecturer in Mathematics**  
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- SCHAEFER, George, Lecturer in Education**  
B.S., Teachers College, Trenton, 1939; M.A., Teachers College, Columbia  
University, 1948.
- SCHIFFMAN, Gilbert B., Lecturer in Education**  
B.S., Northern Illinois University, 1949; A.B., George Washington University,  
1952; Ed.M., Temple University, 1955.
- SCHINDLER, Alvin W., Professor of Education**  
A.B., Iowa State Teachers College, 1927; M.A., State University of Iowa,  
1929; Ph.D., 1934.
- SCHLARETZKI, Walter E., Associate Professor and Acting Head, Department  
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B.A., Monmouth College, 1941; M.A., University of Illinois, 1942; Ph.D.,  
Cornell University, 1948.
- SCHMID, John A., Lecturer in Education**  
B.S., Towson State Teachers College, 1939; M.Ed., University of Maryland,  
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- SCHMIEDER, Allan A., Assistant Professor of Geography**  
B.S., Edinboro State College, 1955; M.A., Ohio State University, 1956.
- SCHMITT, Charles J., Assistant Professor of Speech**  
B.A., Montana State University, 1953; M.A., University of Wisconsin, 1956;  
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## FACULTY

- SCHUSTER, Charles R., Instructor in Psychology  
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- SCHWARTZ, David S., Lecturer in Economics  
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- SEABROOK, Martha R., Lecturer in English  
A.B., George Washington University, 1946; M.A., Columbia University, 1949; M.S.L.S., Catholic University of America, 1957.
- SEARS, Christiane, Lecturer in Foreign Languages  
Secondary Baccalaureat Paris, France; Ecole Nationale des Langues Orientales Ve Vaures; Ecole Nationale des Beaux-Arts.
- SHAFFNER, Robert S., Lecturer in Education  
A.B., University of Maryland, 1948; M.Ed., 1952, Ed.D., 1962.
- SHAKLEE, Harold G., Lecturer in Mathematics  
B.S., Oklahoma University, 1949; M.A., 1950.
- SHANKWEILER, Paul W., Associate Professor of Sociology  
Ph.B., Muhlenberg, 1919; M.A., Columbia University, 1921; Ph.D., University of North Carolina, 1934.
- SHELEG, Boris, Lecturer in Mathematics  
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- SHERMAN, Stanley N., Lecturer in Business Administration  
B.A., University of Maryland, 1952; M.B.A., 1960.
- SHORE, Thomas C., Lecturer in Education  
B.S., Wake Forest College, 1950, North Carolina State College, 1952; M.I.A., North Carolina State College, 1956.
- SHROFF, Arvin P., Instructor in Chemistry  
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- SIHATGAR, Sadegh, Assistant Instructor in Mathematics  
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- SICKELS, Robert J., Instructor in Government and Politics  
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- SIMMS, Betty H., Assistant Professor of Education  
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- SIMPSON, Ethel C., Instructor in English  
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- SKARBEEK, James F., Lecturer in Education  
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- SLACUM, Eleanor L., Assistant Professor of Nursing  
B.S., University of Maryland, 1950; M.S., 1961.
- SLAWSKY, Zaka I., Lecturer in Physics  
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- SLUSHER, Howard S., Assistant Professor of Physical Education  
B.S., Morehead State College, 1960; M.A., Colorado State College, 1961.
- SMALLWOOD, Johnny B., Jr., Lecturer in History (Far East)  
B.A., North Texas State College, 1955; M.A., 1956, Ph.D., University of North Carolina, 1963.
- SMITH, Barry, Lecturer in English (Europe)  
B.A., Texas Agricultural and Mechanical College, 1950; M.A., University of Texas, 1953.
- SMITH, D. Harrison, Lecturer in History (Europe)  
B.S., Georgetown University, 1939; M.A., 1942; Ph.D., 1950; Ph.D., Fri-bourg University, 1951.
- SMITH, Gayle S., Assistant Professor of English  
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- SMITH, Linda C., Lecturer in Education  
B.S., State University of Iowa, 1929; M.A., 1931; Ed.D., Temple University, 1949.
- SMITH, Virginia S., Lecturer in Foreign Languages  
B.A., George Washington University, 1943; M.A., Yale University, 1944; M.A., Middlebury College, 1957.
- SMITH, William R., Lecturer in Mathematics  
A.B., S.B., University of Chicago, 1949; M.S., University of Wisconsin, 1951.
- SMUCK, Thomas E., Lecturer in History (Europe)  
A.B., Chicago State College, 1946; M.A., University of California at Los Angeles, 1947; Ph.D., 1952.
- SPECKHARD, Robert R., Lecturer in English (Europe)  
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## FACULTY

- SPENCER, Mabel S., Associate Professor of Home Economics  
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- SPIVEY, Clinton, Associate Professor of Business Organization and Management  
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- STANT, Margaret A., Assistant Professor of Childhood Education  
B.S., University of Maryland, 1932; M.Ed., 1955; A.P.C., George Washington University, 1959.
- STARCHER, E. Thomas, Assistant Professor of Speech  
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- STARTT, William A., Instructor in English  
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- STEIN, Gloria F., Lecturer in English  
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- STEINMEYER, Reuben G., Professor of Government and Politics  
A.B., American University, 1929; Ph.D., 1935.
- STEPANOVICH, George, Lecturer in Economics  
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- STEPHENS, Henry E., Lecturer in Mathematics  
B.S., United States Naval Academy, 1944; M.C.E., Rennselaer Polytechnic Institute, 1948; Ph.D., University of Illinois, 1954.
- STEPHENS, Perry L., Lecturer in Mathematics  
B.S., United States Naval Academy, 1951; M.S., Air Force Institute of Technology, 1960.
- STERN, Frank, Lecturer in Physics  
B.S., Union College, 1949; Ph.D., Princeton University, 1955.
- STERN, Herbert J., Lecturer in Education  
B.S., Johns Hopkins University, 1950; M.Ed., 1953; Ed.D., 1962.
- STEWART, Charles T., Assistant Professor of Education  
A.B., Erskine College, 1915; M.A., University of Maryland, 1951.
- STEWART, James M., Assistant Professor of Chemistry  
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- STEWART, Milton D., Jr., Lecturer in Economics (Far East)  
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- STONE, Edith O., Lecturer in English  
B.A., Pacific Union College, 1938; M.A., 1942; Ph.D., University of Michigan, 1960.
- STONE, Martha C., Instructor in English  
B.S.Ed., Southeast Missouri State College, 1927; M.A., University of Missouri, 1929.
- STRATTON, Thomas J., Lecturer in Business Administration  
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- STRAUB, Dorothy E., Lecturer in English  
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- STRAUSBAUGH, Warren L., Associate Professor and Head of Speech  
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- STUTTS, Marilyn, Lecturer in Home Economics  
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- SWAN, Herbert L., Lecturer in Speech (Far East)  
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- SWART, John C., Lecturer in Speech (Far East)  
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- TAYBACK, Matthew, Lecturer in Nursing  
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- TERRY, Doris E., Assistant Professor of Physical Education  
B.S., Western Kentucky State College, 1949; M.S., University of Indiana, 1952; M.Ph., University of North Carolina, 1958.
- THICKSTUN, William R., Sr., Lecturer in Mathematics  
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## FACULTY

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THOMPSON, Morris, Lecturer in Foreign Languages

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THOMPSON, Travis I., Lecturer in Psychology

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- TUCKER, Frank H., Lecturer in History  
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- TURNAGE, Thomas W., Assistant Professor of Psychology  
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- TURSMAN, Richard A., Lecturer in Philosophy (Atlantic)  
B.A., University of Colorado, 1957; M.A., University of Illinois, 1959.
- TYCHSEN, Charles E., Lecturer in Economics  
B.S., Princeton University, 1943; M.B.A., Ohio State University, 1958; M.S.,  
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- UMPHREY, James R., Lecturer in Speech (Europe)  
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- VAN ROYEN, William, Professor and Head of Geography  
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- VAN ZWOLL, James A., Professor of Education  
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- VETTER, Harold, Lecturer in Psychology (Far East)  
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- VICARS, Earl C., Lecturer in Mathematics  
B.S., Purdue University, 1942; D.Eng., University of California, 1952.
- VIGORITO, John V., Lecturer in English (Europe)  
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- WAETJEN, Walter B., Professor of Education  
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## FACULTY

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- WALKER, Virgil R., Lecturer in Education  
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- WALLINGFORD, Allen D., Lecturer in Mathematics  
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- WALT, James, Instructor in English  
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